

DOCKET NO: A-98-49, II-A4-113

WASTE CHARACTERIZATION INSPECTION REPORT

PROPOSED APPROVAL

**EPA BASELINE INSPECTION NO. EPA-GEVNC-CCP-RH-12.08-8
OF THE CENTRAL CHARACTERIZATION PROJECT
REMOTE-HANDLED TRANSURANIC WASTE CHARACTERIZATION
PROGRAM FOR GENERAL ELECTRIC VALLECITOS NUCLEAR CENTER
December 2–4, 2008**

**U.S. Environmental Protection Agency
Office of Radiation and Indoor Air
Center for Waste Management and Regulations
1200 Pennsylvania Avenue, NW
Washington, DC 20460**

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ACRONYMS

AK	acceptable knowledge
AKE	acceptable knowledge expert
AKSR	acceptable knowledge summary report
ALARA	as low as reasonably achievable
Am	americium
Ba	barium
BDR	batch data report
CBFO	Carlsbad Field Office
CCP	Central Characterization Project
Ce	cerium
Cf	californium
CFR	<i>Code of Federal Regulations</i>
CH	contact-handled
CH-TRAMPAC	Contact-Handled Transuranic Waste Authorized Methods for Payload Control
CH WAC	Contact-Handled Waste Acceptance Criteria
Ci	curie
Ci/Ci	curies per curie
Ci/L	curies per liter
CIS	Characterization Information Sheet
Cm	curium
Co	cobalt
CPR	cellulose, plastic, and rubber
CRR	Characterization Reconciliation Report
Cs	cesium
CSS	Correlation and Surrogate Summary
CSSF	Correlation and Surrogate Summary Form
CTP	Confirmatory Test Plan
DOE	U.S. Department of Energy
DQO	data quality objective
DR	discrepancy resolution
DRF	discrepancy resolution form

DTC	dose-to-curie
EPA	U.S. Environmental Protection Agency
Eu	europium
FGE	fissile gram equivalent
FR	<i>Federal Register</i>
g	gram or grams
g/cm ³	grams per cubic centimeter
GEVNC	General Electric Vallecitos Nuclear Center
HLW	high-level waste
INL	Idaho National Laboratory
ITR	Independent Technical Reviewer
kg	kilogram or kilograms
LANL	Los Alamos National Laboratory
lb	pound or pounds
LO	Lead Operator
LLW	low-level waste
LWR	light-water reactor
m ³	cubic meter
mR/hr	milli Roentgen per hour
mrem/hr	millirem per hour
MSDS	material safety data sheets
N/A	not applicable
nCi/g	nanocurie per gram
NCR	non-conformance report(s)
NDA	non-destructive assay
NMED	New Mexico Environment Department
No.	number
Np	neptunium
NWPA	Nuclear Waste Policy Act
OJT	on-the-job training
ORIA	Office of Radiation and Indoor Air
PA	performance assessment
PE Ci	plutonium equivalent curie

PTS	Project Tracking System
Pu	plutonium
QA	quality assurance
QAO	quality assurance objective
QAPD	quality assurance program document
RC	radiological characterization
Rem	Roentgen Equivalent Man
RCRA	Resource Conservation and Recovery Act
RH	remote-handled
Ru	ruthenium
SAP	Sampling and Analysis Plan
Sb	antimony
SCG	Summary Category Group
SME	Subject Matter Expert
SNF	spent nuclear fuel
SPM	Site Project Manager
SQAO	software quality assurance officer
Sr	strontium
SRS	Savannah River Site
T1	Tier 1
T2	Tier 2
TCO	Transportation Certification Official
TMU	Total Measurement Uncertainty
TRAMPAC	Contact-Handled Transuranic Waste Authorized Methods for Payload Control
TRU	transuranic
U	uranium
VE	visual examination
VEE	visual examination expert
VEO	visual examination operator
VET	visual examination technique
VPM	vendor project manager
WAC	waste acceptance criteria
WAP	waste analysis plan

WC	waste characterization
WCA	Waste Certification Assistants
WCO	Waste Certification Official
WCPIP	Waste Characterization Program Implementation Plan
WG Pu	weapons-grade plutonium
WIPP	Waste Isolation Pilot Plant
WMC	Waste Matrix Code
WMP	waste material parameter
WSPF	Waste Stream Profile Form
WSPS	Waste Stream Profile Sheet
WWIS	WIPP Waste Information System
Y	yttrium
Zr	zirconium

1.0 EXECUTIVE SUMMARY

From December 2 through 4, 2008, the U.S. Environmental Protection Agency (EPA or the Agency) conducted a baseline inspection (Inspection No. EPA-GEVNC-CCP-RH-12.08-8) at the General Electric Vallecitos Nuclear Center (GEVNC) located in Sunol, California. Regulations at 40 CFR Part 194.8(b) require EPA to inspect waste characterization (WC) activities of the Central Characterization Project (CCP) to characterize remote-handled (RH) transuranic (TRU) debris waste for disposal at the Waste Isolation Pilot Plant (WIPP). The RH debris resulted from the decontamination and demolition (D&D) of Hot Cell 4 in Building 102 at GEVNC between 2008 and 2009, and the proposed approval is limited to this waste stream. The hot cells were used primarily for non-destructive examination of fuel materials and the production of radionuclide sources. The examinations consisted mainly of post-irradiation examination (PIE) of uranium fuel and reactor components until 1982. Since then, the hot cell has been used for the production of radionuclide sources. CCP was not prepared for the EPA inspection and did not provide sufficient objective evidence for EPA's evaluation during the inspection. This resulted in EPA identifying several significant issues. EPA concluded that the inspection could not be completed and that extensive documentation revisions were necessary. During early 2009, CCP provided revised documentation in the form of additional technical information and objective evidence in response to outstanding issues discussed later in this report.

The inspection scope covered only one RH waste stream, GEVNC.01 and no additional RH TRU waste is to be generated during the D&D of the Hot Cell 4. This inspection's focus was to evaluate the acceptable knowledge (AK) records that had been assembled to document RH TRU WC activities, in conjunction with the development of scaling factors, dose-to-curie (DTC) and visual examination (VE) to confirm physical and radiological contents of individual TRU RH debris waste containers, and the use of the WIPP Waste Information System (WWIS) to report and track waste information. This inspection was similar to previous EPA inspections of CCP WC activities at RH waste sites (see Air Docket Nos. A-98-49, II-A4-72; A-98-49, II-A4-73; A-98-49, II-A4-96; A-98-49, II-A4-104; and A-98-49, II-A4-111).

EPA must verify compliance with 40 CFR 194.24 before waste may be disposed of at the WIPP, as specified in Condition 3 of the Agency's certification of the WIPP's compliance with disposal regulations for TRU radioactive waste [63 *Federal Register* (FR) 27354 and 27405, May 18, 1998]. EPA Baseline Inspection No. EPA-GEVNC-CCP-RH-12.08-8 was performed in accordance with the provisions of 40 CFR 194.8(b), as issued in a July 16, 2004, FR notice (Vol. 69, No. 136, pp. 42571–42583).

The EPA inspection team identified one finding and five concerns related to WC processes GEVNC-CCP implemented to characterize RH debris waste (see Attachments B.1 through B.6). GEVNC-CCP revised a number of specific documents to address the EPA finding and concerns.

After reviewing the documents provided by DOE through early 2009, EPA determined that the GEVNC-CCP RH WC program was technically adequate and that all concerns have been resolved. Therefore, EPA is proposing to approve the following GEVNC-CCP RH WC program components implemented to characterize GEVNC RH Waste Stream GEVNC.01 only:

- (1) The AK process for the RH TRU debris waste stream designated as Waste Stream GEVNC.01 generated during the D&D of Hot Cell 4
- (2) The radiological characterization process using DTC and scaling factors for assigning radionuclide values to Waste Stream GEVNC.01 that is documented in CCP-AK-GEV-501, Revision 1, as supported by the revised calculation packages and detailed in this report
- (3) The VE process to identify waste material parameters (WMPs) and the physical form of the waste
- (4) The WWIS to submit data for both characterization and certification for RH TRU waste
- (5) The attainment of pertinent data quality objectives (DQOs)

Since all the RH waste at GEVNC is only one debris waste stream from D&D activities, no Tier 1 (T1) changes for the EPA-evaluated waste characterization components are needed. No additional RH TRU debris waste streams requiring characterization by CCP for disposal at the Waste Isolation Pilot Plant will be generated. Following an EPA inspection, CCP and other TRU sites routinely revise WC procedures as additional waste containers are characterized and waste-related information is generated. EPA refers to these changes as Tier 2 (T2) changes that require EPA review at regular intervals. The waste stream at GEVNC to be disposed of at the WIPP is of limited volume, and as of the date of this proposed report, more than 75% of the waste has been characterized and packaged. Soon after the CBFO issues a certification, all the RH TRU waste will be disposed of. No additional RH debris waste characterization will occur once the debris from D&D activity is characterized and disposed of at WIPP. The quarterly notification of T2 changes required of other waste characterization sites is not applicable to GEVNC-CCP. In lieu of a quarterly T2 changes submission, however, a one-time T2 information submission to EPA will be necessary. Therefore, no later than four weeks after the last shipment of RH debris waste from the site, GEVNC-CCP must provide applicable T2 changes included in Table 1 below to EPA for review.

GEVNC has indicated that a small quantity of debris from the D&D operation may qualify as contact-handled (CH) TRU debris (i.e., not meeting the external dose rate criterion for RH TRU). It is expected that GEVNC-CCP will ship these CH debris containers to CCP at the Idaho National Laboratory (INL-CCP) for characterization as CH waste prior to disposal at the WIPP. EPA notification prior to shipment concerning these CH waste containers is necessary. In addition, upon characterizing these GEVNC CH containers, INL-CCP must provide EPA documentation on how CH container-specific AK information was handled, non destructive assay (NDA) data on the individual drums, and other supporting information, as appropriate.

EPA does not consider the current version of the Waste Characterization Program Implementation Plan (WCPIP) to be an accurate representation of the processes implemented by the RH waste sites. Like the Waste Acceptance Criteria (WAC), the WCPIP is DOE's upper tier document which describes EPA's TRU waste characterization requirements at 40 CFR 124.24. Based on the WAC and WCPIP, TRU sites in turn develop and implement site-specific WC documents to demonstrate regulatory compliance. [Also, when conducting site audits for certification, CBFO quality assurance auditors evaluate for adequacy each TRU sites' implementation of the WAC and the WCPIP.] Hence, WCPIP is an important DOE document, a

link between the EPA regulations and site compliance. In March 2004, EPA approved the WCPIP indicating DOE/CBFO that the WCPIP should be revised as RH waste sites implement WC components. EPA evaluates each RH program including the program implemented at GE VNC-CCP on the basis of technical adequacy and not with WCPIP compatibility. That is, EPA evaluates the system of controls implemented at the site with respect to compliance with EPA regulations. However, during the Oak Ridge RH inspection EPA issued a concern that required CBFO to revise the WCPIP to reflect the RH site characterization programs as stated in EPA's March 2004 letter to CBFO approving the original WCPIP. In April 2009, DOE HQ made a commitment that CBFO will revise the WCPIP before implementation at any new RH site requiring a baseline approval (e.g., Hanford).

Table 1. Tiering of RH TRU WC Processes Implemented by GEVNC-CCP, Based on December 2–4, 2008 Baseline Inspection

RH WC Process Elements	GEVNC-CCP RH WC - T1 Changes	GEVNC-CCP RH WC - T2 Changes*
Acceptable Knowledge (AK)	None**	Notification and submission of the following items: <ul style="list-style-type: none"> - Correlation and Surrogate Summary Form; (AK 2) - Revisions to the AK Summary CCP-AK-GEV-500, including changes to the associated Reference List; (AK 6) - Updates and revisions to CCP-AK-GEV-501; (AK 12) - Revision of reference M007; (AK 12) - Additional discrepancy resolutions; (AK 13) - Final Waste Stream Profile Form and related attachments, and subsequent change requests; (AK 14) - AK Accuracy reports for this waste stream; (AK 15)
Radiological Characterization, Dose-to-Curie (DTC), and the application of radionuclide-specific scaling factors	None**	Notification and submission of the following items: <ul style="list-style-type: none"> - Revisions of CCP-AK-GEV-501 or CCP-TP-504 that require CBFO approval; (RC 3) - Generation of measurement data for any GEVNC RH TRU container(s) that subsequently qualifies as CH and is subject to NDA; (RC 8)
Visual Examination (VE)	None**	Notification and submission of the following items: <ul style="list-style-type: none"> - Any change to VE procedure(s) that requires CBFO approval; (VE 2)***;
WIPP Waste Information System (WWIS)	None at this time	Notification and submission of the following items: <ul style="list-style-type: none"> - Changes to WWIS procedure(s) that require CBFO approval; (WWIS 2)***; - Changes to the Excel spreadsheet titled WWIS Data Entry Summary Characterization and Certification; (WWIS 2)

* All applicable T2 changes must be provided to EPA within four (4) weeks of completion of the last shipment of GEVNC RH debris proposed for approval to WIPP for disposal

** No additional RH waste from GEVNC will be characterized using the site processes evaluated during the inspection

*** Excluding changes that are editorial in nature or are required to address administrative concerns

2.0 PURPOSE OF INSPECTION

On May 18, 1998, EPA certified that the WIPP will comply with the radioactive waste disposal regulations in 40 CFR Part 191. In this certification, EPA also included Condition 3, which states that “the Secretary shall not allow shipment of any waste from...any waste generator site other than LANL for disposal at the WIPP until the Agency has approved the processes for characterizing those waste streams for shipment using the process set forth in § 194.8.” The approval process described in 40 CFR 194.8 requires DOE to (1) provide EPA with information on AK¹ for waste streams proposed for disposal at the WIPP, and (2) implement a system of controls used to confirm that the total amount of each waste component that will be emplaced in the WIPP will not exceed limits identified in the WIPP Compliance Certification Application.

The rule applying to this baseline inspection can be found in the FR (Vol. 69, No. 136, pp. 42571–42583, July 16, 2004). Under the changes to 40 CFR 194.8 promulgated in the July 16, 2004, FR notice, EPA must perform a baseline inspection of a TRU waste generator site’s WC program. The purpose of the baseline inspection is to approve the site’s WC program based on the demonstration that the program’s components, with applicable conditions and limitations, can adequately characterize TRU wastes and comply with the regulatory requirements imposed on TRU wastes destined for disposal at the WIPP. An EPA inspection team conducts an on-site inspection to verify that the site’s system of controls is technically adequate and properly implemented. Specifically, EPA’s inspection team verifies compliance with 40 CFR 194.24(c)(4), which states the following:

Any compliance application shall: . . . Provide information which demonstrates that a system of controls has been and will continue to be implemented to confirm that the total amount of each waste component that will be emplaced in the disposal system will not exceed the upper limiting value or fall below the lower limiting value described in the introductory text of paragraph of this section.² The system of controls shall include, but shall not be limited to: measurement; sampling; chain of custody records; record keeping systems; waste loading schemes used; and other documentation.

In other words, the purpose of the baseline inspection is to implement the requirements of 40 CFR 194 by assessing whether DOE sites that characterize TRU waste prior to disposal at the WIPP are capable of characterizing and tracking the waste. EPA may also conduct follow-up inspections to address issues remaining from the baseline inspection or to seek further clarification/discussion related to WC processes evaluated during a baseline inspection. By approving the CCP-implemented WC systems and processes at GEVNC-CCP for RH debris waste, EPA confirms that the Agency has evaluated the capabilities of systems and processes

¹ As of the FR notice of July 16, 2004, EPA has replaced the term *process knowledge* with *acceptable knowledge*. Acceptable knowledge refers to any information about the process used to generate waste, material inputs to the process, and the time period during which the wastes were generated, as well as data resulting from the analysis of waste conducted prior to or separate from the waste certification process authorized by an EPA certification decision to show compliance with Condition 3 of the certification decision.

² The introductory text of 40 CFR 194.24(c) states, “For each waste component identified and assessed pursuant to [40 CFR 194.24(b)], the Department shall specify the limiting value (expressed as an upper or lower limit of mass, volume, curies, concentration, etc.), and the associated uncertainty (i.e., margin of error) for each limiting value, of the total inventory of such waste proposed for disposal in the disposal system.”

implemented by the site to accomplish two tasks: (1) the identification and measurement of waste components, such as plutonium, that must be tracked for compliance,³ and (2) the confirmation that the waste in any given container has been properly identified as belonging to the group of approved waste streams.

Following EPA's approval of the WC processes evaluated during the baseline inspection, EPA is authorized to evaluate and approve, if necessary, changes to the site's approved WC program by conducting additional inspections under the authority of 40 CFR 194.24(h). Under 40 CFR 194.24, EPA has the authority to conduct continued compliance inspections to verify that the site continues to use only the approved WC processes to characterize the waste and remains in compliance with all regulatory requirements. Based on the adequacies of the WC processes demonstrated during the baseline inspection, including all conditions and limitations, EPA will specify which subsequent WC program changes or modifications must undergo further EPA inspection or approval under 40 CFR 194.24. EPA accomplishes this by assigning a tier level to selected aspects of the characterization program, as described below.

T1 activities have more stringent reporting requirements and require DOE to notify EPA and receive the Agency's approval prior to implementing the change. DOE will report T2 activities to EPA based on the frequency established in the inspection report. DOE may choose to characterize and dispose of materials at its own risk while EPA considers the proposed T2 changes. EPA does not expect CCP to require any changes to the approved RH characterization program implemented at GEVNC.

3.0 PURPOSE OF THIS REPORT

This report documents the basis for EPA's approval and explains the results of Baseline Inspection No. EPA-GEVNC-CCP-RH-12.08-8 in terms of findings or concerns. Specifically, this report does the following:

- Describes the GEVNC-CCP WC systems for approval
- Delineates a specific set of RH wastes for approval
- Provides objective evidence of the approval basis for all WC systems
- Identifies all relevant system limitations and/or conditions for each WC system and/or waste containers that are subject to this approval
- Identifies T1 and T2 elements, as applicable
- Provides objective evidence of EPA's findings or concerns, as applicable, including their resolution and status

³ The potential contents of a single waste stream or group of waste streams determine which processes can adequately characterize the waste. For example, if AK suggests that the waste form is heterogeneous, the site should select the matrix-appropriate radiological characterization technique to obtain adequate radionuclide measurements. VE serves to confirm and quantify waste components, such as cellulose, rubbers, plastics, and metals. Once the nature of the waste has been confirmed, characterization techniques quantify selected radionuclides in the waste. In some cases, a TRU waste generator site may be able to characterize a range of heterogeneous waste streams or only a few. A site's stated limits on the applicability of proposed WC processes govern the scope of EPA's inspection.

The listings in each section reference the documents that the EPA inspection team members reviewed in support of the technical determination. To see or obtain copies of any items identified in the attached checklists, write to the following address:

Quality Assurance Manager
U.S. DOE/Carlsbad Field Office
P.O. Box 3090
Carlsbad, NM 88221

EPA's final approval decision regarding the GEVNC-CCP RH WC program will be conveyed to DOE separately by letter following EPA's review of public comments received responding to a proposed approval discussed in this report. In accordance with 40 CFR 194.8(b)(3), this information is also available on EPA's Web site at <http://www.epa.gov/radiation/WIPP>.

4.0 SCOPE OF INSPECTION

The scope of Baseline Inspection No. EPA-GEVNC-CCP-RH-12.08-8 included the technical adequacy of the WC systems used by GEVNC-CCP to characterize RH Waste Stream GEVNC.01. The EPA inspection team evaluated these systems with respect to their ability to perform the following functions:

- Identify and quantify the activities of the 10 WIPP-tracked radionuclides (^{241}Am , ^{137}Cs , ^{238}Pu , ^{239}Pu , ^{240}Pu , ^{242}Pu , ^{90}Sr , ^{233}U , ^{234}U , and ^{238}U) and other TRU radionuclides using a combination of AK and DTC with the application of radionuclide scaling factors
- Assign waste material parameters (WMPs) correctly using VE for RH, retrievably-stored debris waste that was repackaged
- Perform effective waste information (data) transfer using the WWIS

The focus for characterization of RH TRU debris wastes was technical evaluation of AK, DTC, VE, and WWIS, including the identification and quantification of the 10 WIPP-tracked radionuclides listed above. The inspection's scope consisted of reviewing records and observing WC practices performed by GEVNC-CCP. Specifically, these systems consisted of the following components:

- The AK process for characterization of radiological and physical contents of S5000 RH TRU debris waste
- The DTC system implemented at GEVNC for the measurement of the external dose rate of RH TRU debris waste, supported by the application of radionuclide-specific scaling factors
- VE for RH TRU debris waste
- The WWIS for the purpose of data transfer for waste components of all RH TRU waste containers that are destined for WIPP emplacement

During an inspection, EPA does not approve characterization data; that function is the sole responsibility of the site being evaluated, in this case, GEVNC-CCP. EPA evaluated the site's WC processes to characterize RH TRU debris waste. The evaluation consisted of interviewing personnel, observing equipment operations and WC practices controlled by site procedures, and inspecting records related to each of the WC processes within the inspection's scope. An important aspect of this evaluation was the objective evidence documenting the effectiveness of the WC processes. Objective evidence typically takes the form of batch data reports (BDRs), Radioassay Data Sheets, AK accuracy reports, VET records from two-person examinations, and WWIS printouts for specific TRU containers. During this inspection, EPA selected samples of each of these items, based on the number and variety of items each WC process produced, consistent with standard auditing techniques. Because the WC activities at GEVNC-CCP have been operational for a short time, EPA selected all the DTC and VE BDRs that had been generated, essentially a 100% sample. Based on the evaluation of the WC processes in conjunction with the objective evidence, EPA determined the technical adequacy of the WC processes and records within the inspection's scope.

5.0 INSPECTION-RELATED DEFINITIONS

During the course of an inspection, EPA inspectors may encounter items or activities that require further inquiry for their potential to adversely affect WC and/or isolation within the repository. The two main categories relevant to WC inspections are identified below:

- *Finding*: A determination that a specific item or activity does not conform to 40 CFR 194.24(c)(4). A finding requires a response from CBFO prior to site approval.
- *Concern*: A judgment that a specific item or activity may or may not have a negative effect on compliance and, depending on the magnitude of the issue, may or may not require a response. A concern requiring a response requires a response from CBFO prior to site approval.

6.0 PERSONNEL

6.1 EPA Inspection Team

The members of the GEVNC-CCP EPA WC inspection team are identified in Table 2.

Table 2. EPA Inspection Team Members

Inspection Team Member	Position	Affiliation
Mr. Edward Feltsorn	Inspection Team Leader	U.S. EPA ORIA
Ms. Rajani Joglekar	Inspector	U.S. EPA ORIA
Ms. Connie Walker	Inspector	S. Cohen & Associates
Ms. Dorothy Gill	Inspector	S. Cohen & Associates
Mr. Patrick Kelly	Inspector	S. Cohen & Associates

6.2 Personnel Contacted

EPA and its support personnel conducted interviews with GEVNC-CCP personnel in several disciplines on several occasions. The personnel contacted represent a sample of the GEVNC-CCP WC staff and are listed in Table 3, along with their affiliation and technical area. This listing includes personnel present at all meetings conducted as part of this baseline inspection.

Table 3. Personnel Contacted During Inspection

Personnel Name	Affiliation	Area of Expertise, Function
Jene Vance	CCP	Radiological Characterization
Buddy Fussell	CCP	VPM
Michael Sensibaugh	CBFO	WTS RH Manager
Tommy Mojica	CCP/URS	VEE
Alyca Attwood	CCP	CCP Records
Joe Tenorio	CCP	VEO
Mike Ramirez	CCP	WCO
Joe Harvill	CCP	Radiological Characterization
David Moody	CCP	Radiological Characterization
Mary Griffith	CCP	DTC, LO
Ronald Whitson	CCP	DTC, LO
Shane Miles	CCP	VEO/ITR, VEE, VPM
Michael White	CCP	VEO/ITR
Anthony Presley	CCP	VEO/ITR
Hillari Neely	CCP	SPM
Irene Quintana	CCP	Lead RH SPM
Creta Kirkes	CCP	WWIS, WCO
Sheri Nance	CCP	AK, AKE
Steve Schafer	CCP	AK, AKE
Kevin Peters	CCP	AK, AKE
Lisa Watson	CCP	AK, AKE
Mark Doherty	CCP	AK, AKE
J.R. Stroble	DOE/CBFO	RH Certification Manager

7.0 PERFORMANCE OF THE INSPECTION

Background and History

GEVNC is a 1,600-acre facility located in Sunol near the cities of Pleasanton and Livermore, California. GEVNC has four nuclear reactors, experimental critical facilities, hot cells, laboratories and engineering facilities, all of which have supported a variety of nuclear research for the U.S. Navy and DOE since the 1950s. The range of activities at GEVNC since its inception includes defense and non-defense related work with nuclear fuels, waste stabilization and reactor startup source manufacturing. Alpha Hot Cell 4 in Building 102 was also used to manufacture Californium-252 (^{252}Cf) and Americium-Beryllium (Am-Be) neutron sources. DOE plans to decontaminate Hot Cell 4 and use it for commercial purposes upon removal of all the RH TRU wastes.

Inspection Process Overview

EPA conducted Baseline Inspection No. EPA-GEVNC-CCP-RH-12.08-8 of GEVNC-CCP's program to characterize RH TRU wastes at GEVNC from December 2 through 4, 2008. This inspection had the scope described in Section 4.0 for the purpose of determining the site's compliance with 40 CFR 194.24. The inspection was conducted in the following steps:

- (1) Obtaining and reviewing site procedures, reports, and other technical information related to RH WC activities used to characterize GEVNC Waste Stream GEVNC.01
- (2) Preparing technical questions prior to the inspection based on the activities cited in (1) above
- (3) Interacting with CBFO and GEVNC-CCP personnel to arrange inspection logistics
- (4) Evaluating GEVNC-CCP's implementation of WC processes for adequacy and demonstrating compliance with 40 CFR 194.24 requirements
- (5) Conducting the baseline inspection at GEVNC to verify the technical adequacy and/or qualifications of RH WC personnel, procedures, processes, and equipment
- (6) Recording five concerns and one finding on EPA Inspection Issue Tracking Forms, which were completed and provided to CBFO and GEVNC-CCP personnel as they were generated (see Attachments B.1 through B.6 for a copy of these forms)
- (7) Communicating all pertinent information to CBFO and GEVNC-CCP personnel
- (8) Pursuing resolution of all identified issues prior to completion of the inspection, when feasible
- (9) Conducting entrance, exit, and daily briefings for CBFO and GEVNC-CCP management personnel
- (10) Obtaining and reviewing GEVNC-CCP documents that were revised in response to the EPA concerns after the inspection, and closing all concerns when possible
- (11) Issuing the inspection report and proposed approval

8.0 TECHNICAL EVALUATION

Sections 8.1 through 8.4 of this report detail the four technical areas assessed during this inspection:

- AK
- Radiological Characterization (performed by application of DTC)
- VE
- WWIS

8.1 Acceptable Knowledge

EPA examined the AK process and associated information to determine whether GEVNC-CCP demonstrated compliance with 40 CFR 194.8 requirements for RH waste stream GEVNC.01.

WC Element Description

As part of the inspection, EPA reviewed the following with respect to the use of AK for RH waste characterization by GEVNC-CCP:

- Inspection scope and waste stream identification to verify that the subject waste is not high-level waste (HLW), low-level waste (LLW), spent nuclear fuel (SNF)
- Role of AK in the characterization methodology, including use of AK to support scaling factors derived by GEVNC-CCP
- Adequacy of Waste Characterization Program Implementation Plan (WCPIP) AK process implementation
- Adequacy of the AK Summary Report (AKSR)
- AK data traceability
- AK source document sufficiency
- WCPIP interpretation with respect to AK qualification
- Confirmatory Test Plan (CTP) preparation and plan adequacy
- Characterization Reconciliation Report (CRR) preparation and plan adequacy
- Correlation and Surrogate Summary (CSS) form and CH-RH correlation
- Personnel training and qualifications
- Non Conformance Reports (NCRs) and AK discrepancy resolution
- AK accuracy
- Plans for load management
- Identification of the method for determining DQOs and DQOs attained through AK Qualification

Documents Provided

The following documents were provided for review:

- CS-OP-PN-015, Sampling and Analysis Plan GE Vallecitos Nuclear Center Hot Cell No. 4, Revision 0, Project No 13706, Effective Date May 30, 2008
- CCP-AK-GEV-500, Central Characterization Project Acceptable Knowledge Summary Report For General Electric Vallecitos Nuclear Center Waste Stream: GEVNC.01 – Hot Cell Debris Waste, Revision 1, October 28, 2008
- CCP-AK-GEV-501, Central Characterization Project Remote-Handled Transuranic Radiological Characterization Technical Report For Remote-Handled Transuranic Debris

Waste from the General Electric Vallecitos Nuclear Center (GEVNC) Revision 0, October 30, 2008

- CCP-AK-GEV-502, Central Characterization Project Remote-Handled Transuranic Waste Certification Plan For 40 CFR Part 194 Compliance and Confirmation Test Plan For General Electric Vallecitos Nuclear Center Waste Stream: GEVNC.01, Revision 0, October 30, 2008
- CCP-TP-005 Revision 18, CCP Acceptable Knowledge Documentation Effective Date: November 16, 2006, CCP-TP-005, Revision 18
- Interoffice Correspondence, from I Quintana to CCP Records; Acceptable Knowledge Accuracy Evaluation for Waste Containers in Waste Stream GEVNC.01, Lot 1, Revision 2, December 3, 2008
- Interoffice Correspondence for Audit Purposes Only, from C. Gomez to M. Sensibaugh, Acceptable Knowledge Accuracy Report: General Electric Vallecitos Nuclear Center, Waste Stream Number GEVNC.01 Lot 1, Revision 2, December 4, 2008
- Acceptable Knowledge Source Document Discrepancy Resolution for Waste Stream GEVCN.01, Hot Cell Debris Waste, EPA Hazardous Waste Number Revisions, K. Peters, December 3, 2008
- CCP-TP-506, Revision 2, Preparation of the Remote-Handled Transuranic Waste Acceptable Knowledge Characterization Reconciliation Report, Effective Date: June 8, 2008
- C011, Memorandum to Frank Marcinowski from W. M. Rose, RE: Defense Determination, GE Vallecitos, March 27, 2005
- NMED Waste Stream Profile Form for GEVNC.01, provided December 2, 2008, and attached Characterization Information Sheet (CIS)
- EPA Waste Stream Profile Form Attachment 4 GEVNC.01 and attached CRR, Undated, provided December 1, 2008
- CRR Container Data Worksheets for Container Nos. GE003, GE004, GE007, GE008, GE009 and GE010
- Interoffice Correspondence, from R.J. Walker to Records, Acceptable Knowledge Accuracy Evaluation for Waste Containers in Waste Stream GEVCN.01, December 1, 2008, (NMED) Revised December 3, 2008
- Interoffice Correspondence, from C. Gomez to M. Sensibaugh, Acceptable Knowledge Accuracy Evaluation for Waste Containers in Waste Stream GEVNC.01, Lot 1, December 1, 2008, (NMED), Revised December 3, 2008
- Training Records: Christine Gomez, Irene Quintana, Mark Doherty, Kevin Peters, Provided November 18, 2008 and December 2, 2008
- CCP-TP-005 Attachment 5, Hazardous Constituents, November 13, 2008

- CCP-TP-005, Attachment 6, Waste Form, Waste Material Parameters, Prohibited Items, and Packaging, General Electric Vallecitos Nuclear Center, and related WMP Calculation Memorandum, August, 2008
- CCP-TP-005 Attachment 8, Acceptable Knowledge Accuracy Report, November 20, 2008
- Headspace Gas Summary Report for GEVNC.01, Lot 1 Containers GE001-GE010, November 21, 2008
- CCP Waste Stream Characterization Checklist, Waste Stream No. GEVNC.01, undated, provided December 2, 2008
- Interoffice Correspondence, from R.J. Walker to CCP Records, Re: Subsequent Headspace Gas Random Sample Selection Candidate Memorandum for Lot 1 of Containers of Waste Stream GEVCN.01 Characterized by the Central Characterization Project at General Electric Vallecitos Nuclear Center, October 29, 2008
- CCP-TP-005, Revision 18 CCP Waste Stream Characterization Checklist, undated, provided December 1, 2008
- CCP-TP-005, Attachment 8 Waste Containers November 19, 2008; this includes 16 containers, however container Nos. 01, 02, and 05 may be removed since their assay values are expected to be less than 100 nCi/g
- CCP-TP-005, Attachment 1, Acceptable Knowledge Documentation Checklist, GE Vallecitos Nuclear Corporation, GEVNC.01 Waste Stream
- CCP-TP-005, Revision 18, Acceptable Knowledge Source Document Reference List, November 19, 2008
- CCP-TP-500, Revision 9, Attachment 3 Visual Examination Site Project Manager Checklist—BDR RHGEVE08001, 8002, 8003
- CCP-TP-504, Revision 7, Attachment 8 SPM Checklist BDRGEVRHDTTC08003, includes Container Nos. GE008 and GE007, November 13, 2008
- NCR GEVNC-0500-08, Uncertainty calculation on the GEVNC Dose-to-Curie spreadsheet contained a mathematical error
- Transmittal of Completed Chain of Custody Forms, CHWM WG, from James Kaylor, INTEC Area Operations to Paul Gomez, May 9, 2006.
- CCP-TP-504, Revision 7, Attachment 8, SPM Checklist BDRGEVRHDTTC08001, includes Container Nos. GE003 and GE004, November 17, 2008
- CCP-TP-504, Revision 7, Attachment 8, SPM Checklist BDRGEVRHDTTC08002, includes Container Nos. GE009 and GE0010, November 17, 2008
- BDR No. GEHSGS08001 Containers GE001-010, HSG Summa Sampling Project Level Validation Checklist and Summary, CCP-TP-001 Revision 17, Attachment 10, November 1, 2008

- C007, Memorandum to R.E. Butler regarding Estimate of Surface Contamination in Cell Four, Ben Murray, November 18, 1982
- C012, Interview by Mark Doherty of Joseph Tenorio, Manager, RH Operations Re: GEVNC Hot Cell 4 Operations Information, Mark Doherty Attachment 2, May 8, 2008
- C013, Interview by Mark Doherty of Stan Lukezic, Hot Cell Operator Re: GEVNC Hot Cell Operations Information, Mark Doherty, Attachment 3, May 10, 2008
- C020, Correspondence to T.W. Darmitzel from Jo Cullen, RE: Decontamination and Decommissioning Activities at GE, January 9, 1991
- C024, Correspondence from Mike Dammann to Rodney Melgard, RE: Request for Service and Price Quotation, authored by Melissa Mannion, July 29, 2008
- C025, Correspondence from Melissa Mannion to Steve Croslin, RE: Purchase Order No PO-004366 EAC R806140-3773 and R806141-3774, Radiochemistry Report for 20 Smear Samples, September 18, 2008
- DR001, Use of Paint Products in Hot Cell 4, K. Peters, December 3, 2008
- M001, Material Hazard Control 1973, 1973-1974
- M002, 1996 BEMR General Electric Vallecitos Nuclear Center, U.S. Department of Energy, Office of Environmental Management, November 8, 1999
- M006, Chemical Inventory for WEP, RHO Cribb, RHO Controlled Area, RHO Shop Area and Electric Shop, undated
- M007, Memo to file from Mark Doherty Re: Calculation of WMPs for GEVNC, Mark Doherty, August 1, 2008
- M008, General Electric Vallecitos Nuclear Center, E. J. Strain, undated
- M013, Hot Cell Facility, Drawing, undated
- M014, Remote Handling Operations and Building 102 Main Floor-Radioactive Materials Area Diagram, undated
- M015, Container Certification No 1080, US DOT 7A Type A- Radioactive Materials, Andy Lopez, May 30, 2002
- M016, Visual Examination Data Forms for Repackaged Drums, CCP, November 18, 2008
- M017, Purchase Order No: PO-004366 from Energy Solutions to Eberline Services, PO-004366, Katharine V. Hatfield, July 21, 2008
- M018, Specifications for Sample Analysis for GE VNC Hot Cell 4, Eberline Services, July 18, 2008
- M019, Southwest Research Institute Sample Analysis Data Sheet, 080802-1, Southwest Research Institute, August 1, 2008
- M020, Standard Purchase Order- General Electric Company to Energy Solutions, 43701177, C. Suggs, March 25, 2008

- M021, Hot Cell 4 Smear Sample Log- Eberline Analysis, Willie Mah, May 30, 2008
- M022, Hot Cell Smear Locations, undated
- M023, Summary Report for GE Vallecitos Hot Cell No 4 Samples, Steve Croslin, December 4, 2008
- P001, Processed Isotope Procedures - Calibration of Neutron Sources, S.K. Jain, Chapter X, Section UU, Revision 0, November 12, 1973
- P002, Remote Handling Technician Training Checklist - R54 (January 1977); Irradiated Materials Examination - Special, Section J. Fission Gas Puncture and Collection System (Fission Gas Release Program) J. I. Tenorio, G. P. Wozadlo, Serial No. RPoS362, January 28, 1977; August 2, 1978
- P012, Design Change Authorizations for conversion of existing beta-gamma hot cell to an alpha-gamma hot cell, operation of the Cell 4 interlock, and procedure for chemical plutonium separation and transfer from Alpha Cell to N.L. Building 103, 1965-1972
- P013, Cell 4 Standard Operating Procedures and Cs-137 Procedure
- P015, Radioactive Waste Shipments to Hanford Retrievable Storage from the General Electric Vallecitos Nuclear Center, Pleasanton, California, E. J. Vejvoda, J. A. Pottmeyer, D. S. DeLorenzo, M. I. Weyns-Rollosso, D. R. Duncan, WHC-EP-0672 N/A, October 1993
- P016, File Drawer Cell 4: Flanders Alpha Cell PB-1401-1003, Operating Experience of G.E. Alpha Cell, Conversion of a Beta-Gamma Hot Cell for Examination of Plutonium-Enriched Fuel Capsules; Letter from J. E. Corrigan to W. H. Bone regarding Proposed Alpha SOP; G. L. Stimmell and N. C. Howard; E. Corrigan, N. C. Howard, and G. L. Stimmell; J. E. Corrigan, 2003, 1969 and November 1966
- P031, HAW Sedimentation J. A. Cook, Revision 0, March 7, 1972
- P033 REDACTED Operations Change Notice; Section D. Part 1. Failed Low Enrichment Fuel Rods, Bonnie Streitz; J. A. Cook, Serial No. REDACTED 606; February 1, 1979; June 13, 1972
- P036 Settlement Agreement Between The United States Department of Energy (DOE) and General Electric Vallecitos Nuclear Center (GEVNC) Concerning Expired Contracts, October 23, 2007
- P039, Cesium-137 Change Authorization and Work Plan for Cesium-137 Microsphere Processing for 3M Company, J.B. Meyers, IP-102-66, September 7, 1978
- P042, The Vallecitos Nuclear Center Hot Cells, R. E. Butler, T. C. Hall, D. Dutina, NEDO-12732, November 1979
- P049, Quality Assurance Program Manual, QAM, Eberline, Rodney Melgard, July 31, 2007
- P050, Quality Assurance Procedures Manual, QAP, Eberline, Rodney Melgard, October 25, 2007

- P051, Quality Control Laboratory Procedures Manual, QCL, Eberline, Katsumi Yamamoto, April 16, 2008
- P052, Section E, Part 2, REDACTED NaK Filling Procedure, S.K. Jain, October 19, 1972
- P053, REDACTED, Operations Change Notice, Section F, Part 1, Preparation of Capsule for Shipment to [REDACTED], Ferguson and Cook, December 6, 1971 and September 16, 1972
- P054, Chapter XII, Irradiated Materials Examination, General Section K, Fuel Rod Decrudding, R.W. Burton, June 6, 1978
- P056, HEDL Vender Fuel Irradiation Program PP&S Detailed Work Plan No.6-Desctructive Examination, June 14, 1974
- P059, SW-846 Method 6020 Inductively Coupled Plasma Mass Spectrometry Analysis, TAP-01-0406-046, Chad Vailey, March, 2008
- P063, Nickel Purification Reactor Procedure, RP-281, January 10, 2008
- P067, Purification of AM-CM in Reactor Waste Samples, RP-966, January 10, 2008
- P071, I-129 Purification-Reactor Procedure, RP-530, January 10, 2008
- P079, Energy Solutions Work Plan Decontamination and Disposal of Hot Cell 4 Waste for the GE-Hitachi Radioactive Materials Laboratory (Project No.137076), CS-OP-PN-017, Energy Solutions, LLC, September 29, 2008
- P080, GEH Vallecitos Nuclear Center Hot Cell Project, TRU Waste Removal Work Instruction (Project No.137076), CS-WM-WI-005, Energy Solutions, LLC, October 2, 2008
- P099, Eberline Services Inc., Richmond Laboratory Internal Audit Report, Anthony W. Toth, November 30, 2007
- P100, Vallecitos Nuclear Center Alpha Cell 4 Decontamination and Radwaste Removal Project; Supplement 36 of Quality Assurance Program 2, QAP-2, Supplement 36, GEVNC, October 8, 2008
- P101, Quality Assurance Program, ES-QA-PG-001, Richard E. Campbell, May 31, 2007
- P102, Quality Assurance Program for Vallecitos Operations Products and Services QAP-2, C. Bassett, January, 2006
- P103, Cell 4 Smear Standard Operating Procedures No. 087-14, J. Tenorio, May 29, 2008
- P104, Reactor Waste Work Plan for Damp Smear Swab, Sample ID 3773, Eberline, undated
- P105, Reactor Waste Work Plan for Damp Smear Swam Sample ID 3774, Ebelrine, January 14, 2008
- U006, RP&S Materials Hazard Control
- U009, Logbook RML-575, 1971 to 1975

- U015, Logbook RML-453, R.E. Smith, RML-453, October 23, 1969
- U016, Logbook RML-479, R.E. Smith, RML-479, July 2, 1970
- U017, Logbook RML-231, R.E. Smith, RML-231, 1967
- U022, Volume Estimate, May 20, 1998
- U023, Logbook RML-720, 1974
- U051, Thermo/Nutech Ge(Li) Analysis Report, August 14, 2008
- U052, Iodine Analysis Data, August 8, 2008
- U053, Energy Solutions Analytical Logbook, Logbook 3773, July 23, 2008
- U054, Neptunium-237 Data, August 24, 2008
- U055, Nickel Data, August 11, 2008
- U056, Technetium Data, August 7, 2008
- U057, Plutonium Data, August 10, 2008
- U058, Radiometrics Log Verification Report, August 20, 2008
- U059, Strontium Data, August 8, 2008
- U060, Trans Pu Data, August 11, 2008
- U061, Tritium Data, August 6, 2008
- U062, Uranium Data, August 8, 2008
- U063, Gamma Data, August 13, 2008
- U031, Logbook RML-455: Letter from K. J. Perry to D. L. Zimmerman and G. P. Ferguson regarding the Examination of F8A Fuel Pins; Metallographic Examination of Task F8A Irradiated Fuel Pins; Metallographic Examination of F8A Capsule Tubing
- K. J. Perry, R. E. Smith, November 11, 1969; April 13, 1970; January 30, 1970
- U036, HEDL Vendor Fuel Irradiation Program RP&S Detailed Work Plan No. 5 - Nondestructive Examination; HEDL Vendor Fuel Irradiation Program RP&S Detailed Work Plan No. 6 - Destructive Examination Fuel Pin/Capsule Nos. 59-63 Revision 0; Revision 0, April 23, 1974; June 14, 1974
- U044, CCP Calculation Package - Cs-137 Scaling Factor Development, J. Vance, November 19, 2008
- U046, CCP Calculation Package - Fission Product Contribution to Total Dose Rate, J. Vance, November 19, 2008
- U047, CCP Calculation Package- Determination of Reportable Isotopes, J. Vance, November 19, 2008

The VE and DTC BDRs that were examined during this inspection are shown in the table below.

Container No.	DTC BDR No.	VE BDR No.
GE001, GE002	-	RHGEVE08001
GE003, GE004	GERHDTTC08001	RHGEVE08002
GE005, GE006	-	RHGEVE08003
GE007, GE008	GEVRHDTTC08003	-
GE009, GE010	GEVRHDTTC08002	-

Technical Evaluation

EPA evaluated the adequacy of AK information specific to GE Waste Stream GEVNC.01, as described in CCP-AK-GEV-500, which consisted of TRU newly-generated debris waste from D&D of a Hot Cell 4 in the following areas:

- (1) The scope of the inspection and waste stream definition were examined for Stream CCP-AK-GEV-500 and were found to be adequate.

The inspection scope was evaluation of AK documentation specific to a single newly-generated debris RH waste stream GEVNC.01. The AK Summary (CCP-AK-GE-500, Revision 1) states that this stream is composed of between 12.5 and 17 m³ of debris generated in Hot Cell 4 in Building 102. Wastes include HEPA filters, hot cell equipment, tools, and support materials such as wipes and bottles that will be generated during D&D. The current plan is to remove debris as the cell undergoes D&D with the intention of returning the cell to GEVNC to use for purposes that will not generate WIPP-eligible waste. The AK Summary states that wastes will be generated from September 2008 to the “summer” of 2009. Inclusion of any GEVNC waste stream(s) proposed for disposal at WIPP other than GEVNC.01, is not permitted under this proposed baseline approval. No additional RH TRU waste from D&D activity is expected to be generated requiring WIPP disposal.

- (2) The Correlation and Surrogate Summary Form (CSSF) process was evaluated and was found to be adequate.

GEVNC-CCP indicated that a CSSF had not been prepared. Attachment A Section 5.3 of the WCPIP states:

If correlations and similarities between CH TRU and RH TRU waste operations at the generator/storage site can be demonstrated, include characterization information for the CH TRU waste as part of the RH TRU waste stream AK information to meet the required DQOs. Such correlations must be documented on the Correlation and Surrogate Summary Form (Attachment 3) and included as part of the AK Summary Report.

GEVNC-CCP representatives stated that there are three CH drums from the D&D activity would be generated and will be shipped to Idaho National Laboratory (INL) for full characterization and disposal as a CH waste stream. EPA must be notified of the characterization and disposal of GEVNC CH waste containers by INL-CCP. It is expected that this information will provide

useful information to the GEVNC RH program, and the information from this CH characterization process must be shared with GEVNC-CCP representatives to be used and integrated as applicable. When this occurs, a CSSF must be prepared and provided to EPA as a T2 change.

(3) Traceability of wastes was examined and was found to be adequate.

The waste included in this waste stream was described by GEVNC-CCP representatives as “newly generated”. Therefore, traceability of containers with respect to original packaging receipts could not be performed. BDRs were provided, as indicated in the table, above. Selected drums could be traced to the DTC and VE BDRs.

(4) Identifications of HLW, TRU versus LLW, and SNF were examined and were found to have been defined appropriately.

The AK Summary examined during the inspection (CCP-AK-GE-500 Revision 1) stated the following with regard to SNF in the waste:

...Waste Stream GEVNC.01 consists of debris waste generated during the decontamination of Hot Cell 4 contaminated during the examination of irradiated fuel materials. These operations did not involve separation or reprocessing of constituent elements from reactor fuel and the waste stream does not contain the irradiated fuel elements withdrawn from a reactor. Therefore, the waste is not a spent nuclear fuel or high-level waste and is eligible for disposal at WIPP as RH TRU waste (Reference C011).

EPA pointed out that this explanation lacked detail [see (6), below], and should be revised to better address why the waste is not spent nuclear fuel. As a result of EPA’s concern, GEVNC-CCP revised the AK Summary (Revision 2) to state the following:

According to the NWPA, spent nuclear fuel is “fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing.” The DOE Radioactive Waste Management Manual (Reference 26) expands on this definition to clarify that “Test specimens of fissionable material irradiated for research and development only, and not production of power or plutonium, may be classified as waste, and managed in accordance with the requirements of this Order when it is technically infeasible, cost prohibitive, or would increase work exposure to separate the remaining test specimens from other contaminated material.

GEVNC-CCP stated that while fuel pins are removed, these are test specimens and waste associated with these fuel pins may be classified as TRU wastes. The AK Summary also states:

High-level waste is defined by the NWPA as “the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid

waste that contains fission products in sufficient concentrations, and other highly radioactive material that the Commission, consistent with existing law, determines by rule requires permanent isolation". Waste Stream GEVNC.01 consists of debris generated during the decontamination of Hot Cell 4 contaminated during the examination of irradiated fuel materials...and did not involve separation or reprocessing of constituent elements from reactor fuel.

GEVNC-CCP therefore states that GEVNC.01 wastes are, by definition, not HLW.

- (5) Waste defense determination was evaluated and was found to be appropriate.

GEVNC-CCP states that: "a variety of defense-related research activities were conducted in Hot Cell 4" and that Hot Cell 4 contained radioactive contamination from the manufacturing of sources for Knolls Atomic Power Laboratory and the Naval Sea System Command. GEVNC-CCP also states that ceramic pellets containing ²³⁹Pu were manufactured for the Lawrence Livermore SYNROC-D research program. GEVNC-CCP then concludes that while the majority of work performed in Hot Cell 4 was non-defense related, there is radioactive material within Hot Cell No. 4 that supported defense research and Naval Reactors. Since segregation of defense and non-defense activities did not take place, GEVNC-CCP concludes that all waste is potentially contaminated with defense-related radionuclides and is therefore eligible for disposal at WIPP.

- (6) Sufficiency of the Acceptable Knowledge Summary Report (AKSR) was evaluated, as well as implementation of AK as required in Attachment A of the WCPIP, and were found to be adequate.

EPA examined the AKSR for clarity, technical completeness, and adequacy. EPA found that several technical and editorial modifications to the AKSR were required to meet these criteria. This concern was discussed with GEVNC-CCP AK personnel, and EPA included it on an EPA Inspection Issue Tracking Form (see Attachment B.1 of this report for a copy of this form), as discussed below. Please note that two aspects of this concern are addressed separately: the Confirmation Test Plan (CTP) is discussed under section (9), below; and AK accuracy is discussed under section (15), below.

EPA Inspection Issue No. GEVNC-CCP-RH-AK-08-002CR, Final: CCP-AK-GEV-500 and other AK-related documents require technical and editorial modifications to correct errors and/or to clarify information. These modifications include, but are not limited to, the items that are listed below:

- References for each of the bulleted time-line activities presented on pages 8-9 of the AK Summary, and correlation of these activities (through reference to detailed discussions) on pages 12-16 are not provided.
- The AK Summary does not clearly state that Hot Cell 4 will be decontaminated and the interior enclosure will be removed, but the cell will not be demolished and will instead be used in the future for other purposes.

- Section 4.1 is unclear regarding which discussions address GEVNC as a whole versus activities that took place in Hot Cell 4.
- The AK record does not reflect all changes that were made to the waste stream volume and radionuclide scaling factors, including the text and tables.
- Information in the text of the AK Summary pertaining to the Q-tip smears obtained in 1982, including the specific analysis and information provided by the activity, is insufficient. This is important because the Sampling and Analysis Plan (SAP) apparently uses this information as the basis for developing specific aspects.
- The radionuclide discussion in Section 5 does not adequately address generalized waste composition. Of particular importance are changes in activities/potential radiological contamination pre-post 1978 (i.e., MOX prior with exceptions, sources post, with exceptions). GEVNC-CCP did not prepare a radiological analysis or table to accompany their own time line that may help make these changes. Note that Section 5.4.10 may also require revision based on EPA Concern No. GEVNC-CCP-RH-AK-08-003CR.
- Table 5 of the CCP-AK-GEV-500 does not adequately reflect modified radionuclide scaling factors.
- The prohibited item discussion in Section 5.4.12 does not include an updated and thorough SNF analysis.
- Table 6 is unclear regarding the quantification methods for TRU Waste, RH Waste, Activity, and determination of the 10 WIPP-Tracked radionuclides.
- Table 6 does not include all AK source documents. It is not clear why reference C007 (e.g., for TRU Waste DQO determinations) is included.
- Ensure that reference lists, including Attachments 2 (WCPIP) and 4 (CCP-TP-005), include all references presented in CCP-AK-GEV-501.

Concern Response: GEVNC-CCP responded by providing Revision 2 of CCP-AK-GEV 500 dated January 8, 2009. EPA examined this document and determined that Bullets 1-5 and 7-9 were adequately addressed through revision of the AKSR. The initial response for Bullets 6 and 10 did not sufficiently address EPA's concern. However, the revisions were provided subsequently in a freeze-file change. Additionally, over 120 individual new references were added to the reference list at the end of the revised AKSR, Revision 2 (Bullet 11). Some references previously listed were either renamed or apparently removed, and it is unclear whether references were updated to include new information and if coordination of reference revision and updating of AK documents is ongoing. It is important that changes or revisions to references are readily ascertainable, and the reasons for revisions are clearly explained. In the future, EPA expects GEVNC-CCP to develop a methodology whereby changes to references are readily apparent on the reference list (e.g., by listing revision numbers), and any changes to titles of references should also include a way to determine the reference's previous title.

Status of Concern: This concern is closed.

Revisions to the AK Summary CCP-AK-GEV-500 are T2 changes, including changes to the associated Reference List (e.g., Attachment 2, Appendix A, WCPIP).

- (7) Sufficiency of AK Support Documents, including the Sampling and Analysis Plan GE Vallecitos Nuclear Center Hot Cell 4, Revision 0, and related document tracking were evaluated and were found to be adequate.

EPA examined several supporting documents, specifically the Sampling and Analysis Plan (SAP) prepared by GE Vallecitos Nuclear Center and included in GEVNC Hot Cell 4, Revision 0, AK Summary CCP-AK-GE-500 (AKSR) and CCP-AK-GE-501 radiological characterization document. With respect to the SAPs, EPA found that there were several inconsistencies throughout the documentation pertaining to the number of samples collected, types of samples obtained, etc. During interviews with GEVNC and GEVNC-CCP representatives, it became clear that there was some confusion regarding the number of swipe samples initially slated for collection versus the ultimate number of samples that were actually collected, and the number of Quality Control (QC) samples. GEVNC-CCP did not provide a document that addressed the results of the sampling process (i.e., a sampling report), in which any field changes or modifications to the proposed plan must be presented and explained, and results of the sampling plan implementation discussed. This concern was discussed with GEVNC-CCP AK personnel, and EPA included it on an EPA Inspection Issue Tracking Form (see Attachment B.2 of this report for a copy of this form), as discussed below.

EPA Inspection Issue No. GEVNC-CCP-RH-AK-08-001F, Final: The Energy Solutions SAP for GE Vallecitos Nuclear Center Hot Cell 4 provides the Energy Solutions proposed sampling locations and sample numbers for swipes to be collected from Hot Cell 4. However, the final sample numbers and locations presented in CCP-AK-GEV-500 and 501 are inconsistent with the proposed sample numbers and locations presented in the SAP. There was no report or memorandum that documented the results of the SAP as it was implemented, including final sample locations, corresponding sample numbers, and location of field duplicates and associated sample identifiers. Needed information includes whether any trip blanks or other field-related quality control samples were collected, and whether these were transmitted to the laboratory for analysis. It may be necessary to revise discussions in CCP-AK-GEV-500 and 501 to be internally consistent and to reflect the results provided. Once these documents have been revised, they should be provided to EPA, along with the report or documents from Energy Solutions.

Concern Response: GEVNC-CCP provided revisions to CCP-AK-GEV-500 and 501, as well as reference M023 that documented the results of the sampling and analysis effort, providing in-field modifications to the program and clarification pertaining to sample collection locations, sample numbers, etc. In summary, reference M023 clarifies that eleven samples and one duplicate (for a total of 12 samples) were collected; this number included an additional smear sample that was collected in-field to ensure that sufficient samples were available in case of sample damage or loss. In addition to these 12 samples, nine more samples were collected for “radiological protection purposes and analyzed by gamma spectroscopy”. These nine sample results were “not used for DOE waste characterization purposes”. No irregularities were noted with respect to the set of 12 smears collected for WIPP characterization purposes. As a result of

this information, both CCP-AK-GEV-500 and 501 were revised to address the correct sample numbers and locations. In the case of CCP-AK-GEV-501, modifications were made to scaling factors and other information based on the updated sampling information and changes to specific technical documents were also made [see 8.2(2)].

Status of Concern: This concern is closed.

In addition to the above concern, the WCPIP includes specific requirements for SAP. Comparison of the Energy Solutions' SAP against the sampling and analysis requirements in the WCPIP produced a concern, which was discussed with GEVNC-CCP AK personnel, and EPA included it on an EPA Inspection Issue Tracking Form (see Attachment B.3 of this report for a copy of this form), as discussed below.

EPA Inspection Issue No. GEVNC-CCP-RH-AK-08-003CR, Final: The SAP must meet the requirements as specified in Attachment C, Section 6 of the RH WCPIP. Please address the following:

- The WCPIP states that the sampling plan "...shall be developed using the guidance provided in EPA QA/G5 and QA/G9." Please indicate how this was attained.
- According to the WCPIP, the waste may include materials in which the "RH TRU materials embedded in...other solid material may require samples to be obtained from within the material." Based on the available data, please address whether any material are present in the GEVNC waste stream that may require this consideration.
- The WCPIP requires that the SAP be submitted to CBFO for review and approval. Please provide evidence of the review and approval.

Concern Response: GEVNC-CCP responded to EPA's three points as follows:

- CCP-GEVNC acknowledged that GEVNC/Energy Solutions prepared and implemented the sampling program prior to CCP's involvement in characterizing the GEVNC RH debris waste stream. GEVNC-CCP personnel stated that the sampling program incorporated the guidance in EPA QA/G5 and QA/G9s, and that the Data Quality Indicators (DQIs) in QAG-5S and the WCPIP QAOs are "synonymous". The EPA inspection team took issue with this and CCP-GEVNC was not able to demonstrate that Energy Solutions used the guidance in EPA QA/G5 and QA/G9 while developing their SAP. EPA's primary focus was the technical adequacy of the sampling and analysis data (i.e., representativeness) as opposed to strict compliance with the WIPP. See the discussion under the third bullet, below.
- GEVNC-CCP personnel stated that because hot cell contamination is the result of destructive examination of fuel or fuel specimens on waste surfaces, all material in the waste stream would be contaminated from the same processes. Accordingly, radioactive materials embedded in the waste items would have the same isotopic ratios as any removable (surface) contamination.

- GEVNC-CCP personnel acknowledged that the SAP was not approved prospectively by CBFO. EPA focused on the technical adequacy of the SAP with respect to obtaining representative samples within Hot Cell 4 to support the development of radionuclide scaling factors [see 8.2 (4), below]. Hot Cell 4 wastes are visible and also are stored “below cell deck”, and the sampling plan must collect information representative of all waste in the cell, irrespective of its location. GEVNC-CCP personnel demonstrated that available data supported their contention that wastes above and below deck are equivalent with respect to the waste material parameters assumed for the waste stream as a whole and that there are no data to suggest otherwise. The data EPA reviewed indicated that the samples collected are adequately representative of wastes in the cell, assuming that no information is obtained as the cell is decommissioned to suggest different radiological or physical parameters are associated with “below deck” waste [see item (12), below].

Status of Concern: This concern is closed.

- (8) Implementation of the WCPIP requirements was evaluated and continues to be inadequate.

In its inspections, EPA examines and determines the adequacy of RH WC programs with respect to 40 CFR 194 requirements directly, not by compliance with the WCPIP. Like the CBFO CH Waste Acceptance Criteria (CH WAC), in the WCPIP, CBFO includes the EPA regulatory requirements at 40 CFR 194.8 and (a) explains which system of controls must be documented in procedures and (b) requires that they be implemented appropriately to show compliance with regulations governing WIPP disposal of TRU RH waste. CBFO developed the WCPIP in 2003, approximately three years prior to approval of the first RH waste stream by EPA. While the WCPIP was developed based on the anticipated WC processes and activities, implementation of WCPIP requirements in the context of actual waste characterization does not always address EPA requirements as specified in or related to the Compliance Certification Application and subsequent Recertification Application(s). While CBFO has revised the WCPIP, the revisions did not address the above needs, or the examples cited below:

- For Performance Assessment (PA) purposes, DOE has committed to assessing 10 radionuclides, and these radionuclides are therefore tracked as part of the waste characterization process. However, the WCPIP does not include determination of these radionuclides in the DQO process.
- The WCPIP states that AK will essentially be the basis for all characterization processes, but uses circular logic and references for AK qualification methodologies (i.e., sampling and analysis). CBFO should consider clarifying the process so that each characterization method is clearly presented.

In some instances, the WCPIP is too specific (e.g., DTC), but not specific enough in others.

- The WCPIP requires the preparation of a “CTP” for the purpose of communicating specifically how CBFO intends to characterize the waste stream (i.e. DTC, VE). However, the WCPIP states that this information should be included in a certification plan that has proven to be an inappropriate location for the information. EPA expected a

clear and concise communication of the intended characterization process, but the format doesn't always allow this.

- The WCPIP mandates the assessment of AK accuracy to address *significant discrepancies* in radionuclide information by comparing AK and characterization information. However, this requirement is not necessarily followed when the characterization approach includes an AK component, and what constitutes a *significant discrepancy* is not defined. The intent of the passage was to require comparison of AK and related confirmatory testing when AK is identified as the primary characterization methodology, but the intent of the comparison is not always addressed.

During a previous RH baseline inspection at the Oak Ridge National Laboratory, EPA issued a concern against CBFO to address the inadequacy of the WCPIP (see Docket No. EPA-HQ-OAR-2008-0820). Given the RH waste characterization experience of the last three years, it would be prudent to revise the proposed characterization approaches and update the WCPIP to either specify additional approaches or allow a more performance-based regulatory compliance demonstration. The EPA concern addressed to CBFO reflected that. CBFO provided a written response to EPA by September 30, 2008, as requested. EPA evaluated the CBFO response and found it to be lacking, and resolution of EPA's issues is pending. CBFO must revise the WCPIP to address the above concern before seeking EPA approval of RH waste characterization program at other RH sites.

- (9) Content and technical adequacy of the CTP were evaluated and, upon modification, found to be adequate.

The purpose of the CTP is to describe the characterization approach to be used for this GEVNC RH waste stream. The CTP states that radiological parameters will be determined by DTC using ¹³⁷Cs as the key gamma-emitting radionuclide and scaling factors for other radionuclides will be based on the results of radionuclide analyses of smear samples. As indicated in (7), above, the smear samples are considered to be AK, and GEVNC CCP qualified the data for use by the equivalent QA qualification approach. GEVNC-CCP also stated that physical waste form will be met using VE (see Section 8.3), and will be performed on the waste stream using "an approved VE procedure as it is being packaged". The waste stream is considered newly-generated, as it is being characterized under the GEVNC-CCP approved QA program using procedures and processes for VE that will take place as the waste is generated/packaged. The CTP is unclear with respect to whether the characterization methods are AK-based with subsequent qualification through sampling, peer review, or equivalent QA, or whether the DQOs will be met through visual examination without "qualification" of AK, as in the case of physical form/liquid identification. EPA understands the characterization approach, but it would be prudent for CBFO when revising WCPIP, should clarify steps for generating CTPs for RH waste characterization.

EPA's review of the CTP identified a concern. This concern was discussed with GEVNC-CCP AK personnel, and EPA included it on an EPA Inspection Issue Tracking Form (see Attachment B.1 of this report for a copy of this form), as discussed below. Please note that the issue related to the CTP is one of the several items in this concern, and that the other items are addressed in sections (6) and (15).

EPA Inspection Issue No. GEVNC-CCP-RH-AK-08-002CR: CCP-AK-GEV-500 and other AK-related documents require technical and editorial modifications to correct errors and/or to clarify information. These modifications include the CTP, which states on page 12 that performance of additional swipe sample collection efforts will be evaluated if the variability of sample results so warrants; please clarify whether this will actually be performed.

Concern Response: GEVNC-CCP responded to this concern by modifying CCP-AK-GEV 500, not CCP-AK-GEV-502, to state that no additional samples will be collected. Since the CTP is written in “future tense” it is appropriate to clarify this question within CCP-AK-GEV-500. EPA understands that no clarification of the CTP-provided information is expected to be done by GEVNC-CCP as no additional samples will be collected and analyzed. However, CBFO must clarify CTP-relevant modifications when CBFO revises the WCPIP to reflect actual RH waste characterization activities implemented at different RH sites approved by EPA. [See the last paragraph under item (8), above.]

Status of Concern: This concern is closed.

- (10) Content and technical adequacy of the CRR was evaluated and was found to be generally compliant with the current WCPIP.

Requirements set forth in CCP-TP-506, Revision 1, CCP Preparation of the Remote-Handled Transuranic Waste Acceptable Knowledge Characterization Reconciliation Report (CRR), were evaluated against the CRR to ensure that all required elements are presented. Mandatory check fields were included in the report. The CRR includes data fields that are intended to address the specific content requirements in the WCPIP. While the mandatory information fields are included, data in fields pertaining to AK record data that address each DQO is vague and is bordering on insufficient. The CRR also did not include the signature of the Site Project Manager (SPM), and did not include the required table of contents. The SPM signature and table of contents were rectified during the inspection, but EPA expects the CRR to be sufficiently complete at the time of the inspection and that the content will be improved to include more information with regard to how AK addresses the DQOs. EPA will examine forthcoming CRRs to ensure that these improvements have been made. Additionally and most significantly, EPA has always indicated that the CRR should address the 10 WIPP-tracked radionuclides in the analysis, because characterization of these radionuclides is paramount to the EPA performance assessment (PA). EPA expects that this oversight will be rectified when CBFO revises the WCPIP as mentioned above.

- (11) Personnel training was evaluated and was found to be adequate.

Personnel involved with the AK portion of the inspection were Mark Doherty (AKE), Irene Gallegos (SPM), Kevin Peters (AKE), Sherry Nance (AKE), Sheila Piercy (document coordination), and Hillari Neely (SPM). Of these, Qualification Cards and Job-Specific Training records for Mark Doherty and Kevin Peters were examined. The WCPIP specifies that AK personnel responsible for compiling AK, characterizing RH TRU waste streams using the AK process, and assessing the AK characterization shall be qualified and trained in the following:

- RH WCIIP
- The nonconformance and corrective action processes
- Procedures presented in Attachment A of the WCIIP
- Site-specific training relative to the contents of the site's waste streams
- Determining radiological contents of individual containers

As found during past inspections, training specific to determining radiological contents of individual containers was not included in the listed training programs. During the inspection, it was ascertained that Jene Vance performed the radiological assessment required by the WCIIP. While this approach appeared appropriate during initial EPA RH inspections, this has resulted in less radiological characterization information being included in the related CCP-AK-500 document to the point that the AK Summary has required consistent revision to include more radiological information [see (6) and (12), below]. More overlap between CCP-AK-GE-500 and CCP-AK-GE-501 in terms of the AK radiological composition of the waste is necessary [see (12), below]. EPA expects GEVNC-CCP to address container-specific radiological training for all AKEs. EPA does not expect GEVNC CCP to revise training qualification cards of GEVNC CCP AK personnel.

- (12) Physical and radiological compositions of the waste stream presented in the AKSR were assessed and found to be adequate.

The AKSR CCP-AK-GE-500 Revision 2 was evaluated for adequacy with respect to radiological and physical waste composition. This revision was provided after the inspection and was edited to address EPA concerns about waste composition information.

EPA had expressed concern about the level of detail in the AKSR regarding the radiological composition of the waste. EPA's concerns were as follows [see (7), above]:

- The radionuclide discussion in Section 5 does not adequately address generalized waste composition. Of particular importance are changes in activities/potential radiological contamination pre-post 1978 (i.e., MOX prior with exceptions, sources post, with exceptions). GEVNC-CCP did not prepare a radiological analysis or table to accompany their own time line that may help make these changes. Note that Section 5.4.10 may also require revising based on EPA Concern No. GEVNC-CCP-RH-AK-08-003CR.
- Table 5 of the CCP-AK-GEV-500 does not adequately reflect modified radionuclide scaling factors.

GEVNC-CCP revised the radiological section of the AK Summary to indicate that a "rough estimate" of the surface contamination in the hot cell was made based on 11 S-tip smears (swipe samples) collected in July and November of 1982. Analysis of the smear samples identified ¹³⁷Cs, ¹²⁴Cs, ⁶⁰Co, ¹⁰⁶Ru, ¹²⁵Sb, ¹⁴⁴Ce, ¹⁵⁴Eu, and ⁹⁵Zr. These radionuclides served as the basis for the 2008 sampling and analysis performed to acquire information DTC measurements [see (7), above]. Reference C007 presents values for each isotope in units of µCi/smear. Additionally, the AKSR was revised to indicate that isotopic contamination in the waste is predominantly from MOX fuel destructively examined in the cell, but that:

Numerous stoichiometric combinations of MOX and reactor histories were introduced into Hot Cell 4 over its operating lifetime...[so] there is no definitive information that is available to estimate the amounts and concentrations of the various radioactive materials introduced into the hot cell and how much of that material may have been left behind...the inability to realistically determine an estimate of the isotopic ratios that may be present in the hot cell resulted in the need to collect samples of the hot cell contamination...

This information is helpful, but does not reflect the data provided to EPA during the inspection, which inferred that different materials were handled within Hot Cell 4 during different time periods. It is clear that the 1982 smear sampling served as a basis for the later sampling program, so additional information could have been summarized in the AK document to support the use of this AK data in the sampling program.

GEVNC-CCP also revised the AKSR to include the updated and modified scaling factors. These scaling factors are:

<u>Radionuclide</u>	<u>Scaling Factor</u>
²³⁸ Pu	1.13E-02
²³⁹ Pu	7.88E-02
²⁴⁰ Pu	3.67E-02
²⁴¹ Pu	4.25E-01
²⁴² Pu	2.17E-05
²⁴¹ Am	9.45E-01
²³³ U	6.14E-07
²³⁴ U	1.518E-04
²³⁸ U	2.77E-06
¹³⁷ Cs	1.00E+00
⁹⁰ Sr	3.00E-01
²³⁵ U	5.45E-06
²³⁶ U	2.52E-06
^{137m} Ba	3.00E-01
⁹⁰ Y	3.00E-01

Of these, ^{137m}Ba and ⁹⁰Y are not included in CCP-AK-GE-501 Revision 2, because of their relatively short half-lives (reference M023).

GEVNC-CCP addressed EPA's concerns, but did not provide relative time differentiation of waste management activities in Hot Cell 4 as discussed during the inspection and as requested in EPA's concern. Inclusion of a generalized compositional range of MOX fuel managed in the cells, as well as additional information pertaining to ²⁴¹Am and ²⁵²Cf, including when each was managed in the cell, would strengthen this document considerably. This information is important because the waste "below deck" may prove to differ to the extent that GEVNC-CCP would reconsider the use of a single isotopic distribution for all waste. EPA has observed this at other RH TRU sites (See Docket No. A-98-49, II-A4-99) and if this were to occur at GEVNC,

both CCP-AK-GE-500 and CCP-AK-GEV-501 would require revision. Because GEVNC-CCP provides AK-related radiological information in CCP-AK-GE-501, notifications of updates and revisions to this document are considered T2 changes.

With respect to physical characteristics of the waste, GEVNC-CCP indicates that the current waste stream volume estimate is about 12.5 m³, with an expected period of generation from September 2008 to Summer 2009. WMPs were estimated based of the materials observed to be present in the cell through the cell windows, and knowledge about the weight of waste materials from other sites. GEVNC-CCP expects the waste to be composed primarily of organic (27%) and inorganic (73%) debris. It should be noted that waste will be evaluated by visual examination (see Section 8.3) during packaging, and the waste content will be verified and assessed through AK Accuracy calculations [see (15), below]. EPA expects GEVNC-CCP to verify the waste stream and WMCs, as well as the anticipated WMP distribution as the waste is removed and visually examined. Revision of reference M007 is a T2 change, as this memorandum documents the calculation of waste material parameters.

- (13) Data limitations, NCRs, and Discrepancy Resolution Forms (DRFs) were examined and were found to be adequate.

DRFs were not provided to EPA at the beginning of the inspection. However, during the inspection a discrepancy was identified pertaining to the chemical content of the waste, and a draft DRF was prepared that was later provided to EPA (DR001, dated December 4, 2008). DRFs must be provided to EPA as a T2 change.

Data limitations are included as a line item on Attachment 5 of the WCPIP Appendix A, and this is included as a cover page to every source document. Typically, data limitations are addressed on this form. GEVNC-CCP provided one example NCR, No. GEVNC-0500-08, that pertained to uncertainty calculations. This NCR documented the discovery of a mathematical error associated with the DTC calculations.

- (14) The Draft Waste Stream Profile Form (WSPF) was examined and found to be adequate.

A draft WSPF was provided during the inspection. It is noted that this form was for “audit purposes only”, and it will be revised and finalized as characterization of the waste stream progresses. The final WSPF and related Attachments (i.e., CRR), and subsequent change requests is a T2 change. It should be noted that GEVNC-CCP has elected to generate two WSPFs, one that they believe focuses on EPA requirements or requirements of the WCPIP, and a second that complies with the WAP (i.e., contains the Characterization Summary Sheet). While it is GEVNC-CCP’s prerogative to use this approach, it is inefficient and adds an unnecessary layer of documentation and document management. GEVNC-CCP should consider combining the two forms in the future, as a majority of the required information is common to each.

- (15) AK Accuracy was assessed and was found to be adequate as demonstrated by GEVNC-CCP’s ability to generate AK accuracy reports.

Upon evaluation of AK accuracy, EPA identified a concern. This concern was discussed with

GEVNC-CCP AK personnel, and EPA included it on an EPA Inspection Issue Tracking Form (see Attachment B.1 of this report for a copy of this form), as discussed below. Please note that the issue related to AK accuracy is one of the several items in this concern, and that the other items are addressed in sections (6) and (9), above.

Inspection Issue No. GEVNC-CCP-RH-AK-08-002CR: CCP-AK-GEV-500 and other AK-related documents require technical and editorial modifications to correct errors and/or to clarify information. These modifications include the items related to the AK Accuracy Report (December 1, 2008), which states that the AK compilation for the waste stream is complete and the required AK accuracy report is therefore incorporated into CCP-AK-GEV-502. This is not correct, as the waste stream contains only six characterized containers.

Concern Response: GEVNC-CCP responded to this concern by modifying the AK Summary during the inspection to ensure that the appropriate number of containers was included in the AK Accuracy Report. This approach required multiple iterations.

Status of Concern: This concern is closed.

AK Accuracy reports for this waste stream must be provided as a T2 change.

(16) Load Management was assessed and was found to not apply to GEVNC-CCP at this time.

GEVNC-CCP representatives were questioned whether any containers generated during repackaging would contain less than 100 nCi/g of TRU radionuclides. GEVNC-CCP indicated that if any containers were identified that contained less than 100 nCi/g of TRU radionuclides, the containers would be segregated and would not be load managed. EPA understands that load management will not be performed for waste stream GEVNC.01.

(17) Attainment of DQOs through AK verification was evaluated and found to be acceptable.

As a result of the analysis presented in items (1) through (16) above, EPA was able to assess how each DQO will be addressed. The following DQOs must be addressed per the WCPIP:

- Defense determination
- TRU waste determination
- RH waste determination
- Activity determination (TRU Alpha Activity per canister, including quantification and identification of the EPA 10 WIPP-tracked radionuclides)
- Residual Liquids
- Physical Form, including metals and CPR

CCP-TP-502 indicated that the defense determination is supported solely by documented information that is compiled through the AK process. The TRU waste determination is made through a combination of AK (sampling qualified by equivalent QA) and DTC. RH status as

determined by AK is verified through direct measurement of the container's surface dose rate and the TRU alpha activity is determined by AK-derived isotopics (qualified by equivalent QA), and direct DTC measurements. The CTP states that residual liquid content and physical form will be documented during waste packaging. The use of AK to determine DQOs as described in the CTP was acceptable and meets the fundamental intent of the WCPIP.

Summary of AK Findings and Concerns

The EPA inspection team identified three concerns related to AK, which are discussed above. Please note that for logistical reasons, one concern is discussed in three sections above. Copies of the EPA Inspection Tracking Forms are included in Attachments B.1 through B.3. EPA considers all aspects of these concerns to have been adequately addressed, and there are no open findings or concerns related to AK resulting from this inspection.

Proposed Baseline Approval

EPA is proposing to approve the AK process evaluated during this baseline inspection. The proposed approval is limited to newly generated debris waste generated in Hot Cell 4 that will be packaged into 55-gallon drums. Waste will be generated during 2008-2009, as defined in CCP-AK-GEV-500, Revision 2.

Proposed AK Tiers

T1 AK changes are not identified for this proposed approval. Once the subject debris waste stream is characterized and disposed of at WIPP, GEVNC-CCP will not characterize any additional GEVNC RH waste for WIPP disposal.

T2 AK changes do not require EPA approval before implementation, but require that GEVNC-CCP provide EPA the following documents for review, as listed below with a reference to the specific AK section where each is discussed in parentheses:

- Availability of the CSSF (2)
- Revisions to the AK Summary CCP-AK-GEV-500, including changes to the associated Reference List (6)
- Updates and revisions to CCP-AK-GE-501 (12)
- Revision of reference M007, as this memorandum documents the calculation of waste material parameters (12)
- Availability of additional discrepancy resolutions (13)
- Notification of availability of the final WSPF and related Attachments (i.e., CRR), and subsequent change requests (14)
- Availability of AK Accuracy reports for this waste stream (15)

GEVNC-CCP will provide EPA with information concerning T2 changes no later than 4 weeks after the last shipment of RH waste from the site is completed. Consistent with EPA's authority under 194.24(h), EPA may request information relative to these changes if EPA deems the information is necessary to ensure compliance with EPA regulations.

8.2 Radiological Characterization

During radiological characterization (RC) inspection, EPA inspected one Dose-to-Curie (DTC) measurement system located on site at GEVNC, supported by the development of radionuclide-specific scaling factors.

Overview of GEVNC RH Waste

Waste Stream GEVNCR.01 consists of heterogeneous debris wastes containing mixtures of radionuclides from the hot cell operations and analytical fuel pin examinations that were conducted in Hot Cell 4 within Building 102. These wastes are currently unpackaged and GEVNC-CCP intends to remove the wastes directly from Hot Cell 4 into 55-gallon drums. These wastes are expected to contain sufficient amounts of ^{137}Cs to produce RH dose rates, i.e., in excess of 200 mRem/hr, however some wastes may ultimately be deemed CH TRU or non-TRU (low level waste or LLW), based on the characterization results. Typical hot cell activities have included MOX fuel rod development; PIE of various types of fuel; and the manufacturing of ^{252}Cf and Am-Be neutron sources. An effort to collect and analyze a set of smear (swipe) samples from a number of locations within the hot cell was initiated and completed in May 2008 and the analytical data produced by this effort were used to develop radionuclide scaling factors, as discussed subsequently in this report.

Overview of GEVNC Radiological Characterization

The nature of RH TRU wastes presents difficulties with respect to obtaining meaningful measurement data, as is routinely done with CH TRU wastes. Apart from the obvious personnel exposure concerns associated with working in external radiation fields in excess of 200 millirem per hour (mrem/hr), RH TRU waste containers typically contain concentrations of energetic photon emitters, i.e., ^{137}Cs , ^{60}Co , ^{152}Eu , and ^{154}Eu , that prevent a meaningful measurement-based isotopic determination.⁴ Accordingly, RH radiological characterization relies on alternate methods, such as the development of scaling factors that correlate an easily measured parameter like a waste container's external exposure (dose) rate with isotopic distributions for specific TRU radionuclides. The development of radionuclide scaling factors at GEVNC-CCP is comparable to what EPA has evaluated and approved in previous RH baseline inspections.

The development of the ^{137}Cs scaling factors was supported by the following two sources of information:

⁴ There are other gamma-emitting fission and activation products with shorter half-lives that typically decay sufficiently to allow their contribution to a container's external gamma measurement to be ignored for purposes of DTC.

- Information on the activities conducted within Hot Cell 4 including the radionuclide content of the materials handled in the hot cell and the waste generating activities. This information is essentially the same as what is presented in CCP-AK-GEV-500, as discussed in Section 8.1.
- Radiochemical sample results from a smear sampling and analysis campaign conducted in May 2008. This sample information was used in combination with the results of MicroShield® modeling to develop the fractional contribution of radionuclides other than ¹³⁷Cs to the total gamma dose rate.

The characterization methods used for the GEVNC-CCP RH wastes were evaluated in terms of the technical adequacy of the approach, as supported by the program's documents, procedures, and controls, and the knowledge and understanding of the personnel involved in the RH WC program. During this RH inspection, the EPA inspection team evaluated the following elements of the GEVNC-CCP radiological characterization program:

- External gamma measurements made at GEVNC
- Development of a DTC correlation as a function of waste density using MicroShield® based on each drum's measured external exposure (dose) rate, assuming the main contributor to the external exposure was ¹³⁷Cs
- Derivation of radionuclide scaling factors for the WIPP-tracked radionuclides using analysis of swipe samples collected in Hot Cell 4 in 2008

Documents Reviewed

The list provided below includes all documents related to the ORNL-CCP RH radiological characterization program that were evaluated to support this inspection:

- CCP-AK-GEVNC-501, Central Characterization Project Remote-Handled Radiological Characterization Technical Report For Remote-Handled Transuranic Debris Waste From the General Electric Vallecitos Nuclear Center (GEVNC); Revision 0, October 30, 2008 and Revision 1, January 23, 2009
- CCP-AK-GEV-500, Central Characterization Project Acceptable Knowledge Summary Report For General Electric Vallecitos Nuclear Center; Waste Stream: GEVNC.01 – Hot Cell Debris; Revision 1, October 28, 2008 and Revision 2, January 8, 2009
- CCP-AK-GEV-502, Central Characterization Project RH TRU Waste Certification Plan for 40 CFR Part 194 Compliance and Confirmation Test Plan for General Electric Vallecitos Nuclear Center; Waste Stream: GEVNC.01; Revision 0, October 30, 2008
- CCP-TP-504, Revision 6, CCP Dose-To-Curie Survey Procedure for Remote-Handled Transuranic Waste; February 6, 2008
- DTC BDR Nos. GEVRRHDTTC08001, GEVRRHDTTC08002, and GEVRRHDTTC08003
- AK Accuracy Report, December 1, 2008
- WSPF, Draft

- List of Qualified Individuals (LOQI), as of November 11, 2008: VE, HSG & DTC
- GEVNC-RH-01, Revision 0
- GEVNC-RH-02, Revision 1
- GEVNC-RH-03, Revision 0
- GEVNC-RH-04, Revision 0
- INL-RH-04, Revision 0
- GEVNC-RH-05, Revision 0
- GEVNC-RH-06, Revision 1
- ORNL-RH-07, Develop DTC Correlation for Cs-137, Eu-152 and Eu-154, Revision 1
- GEVNC-RH-07, Revision 1
- ORNL-RH-13, MCNP5 Analysis for DTC Uncertainty, Revision 1
- Compact disk (CD) containing radiochemical data reports and supporting information from Eberline provided during the inspection

Technical Evaluation

The EPA inspection team evaluated the following aspects:

- (1) The technical adequacy and documentation of the correlation of the GEVNC radionuclide inventory values to the ^{137}Cs concentrations were evaluated and were found to be adequate.

The basic assumption for the radiological characterization of GEVNC hot cell waste is that the ^{137}Cs scaling factors relate to the inventory values of the radionuclides of interest, i.e., the 10 WIPP-Tracked radionuclides. This concept is appropriate for co-located wastes provided that additional processing or other events have not selectively isolated specific radionuclides. This is addressed in subsequent parts of this section, below.

There were no concerns regarding the technical adequacy and documentation of the correlation of the GEVNC radionuclide inventory values to the ^{137}Cs concentrations in GEVNC.01. The application of radionuclide values described above applies only to the wastes generated in Hot Cell 4 at GEVNC, as discussed throughout this report.

- (2) The radiochemical data were evaluated and found to be representative and technically adequate to support the development of scaling factors.

The degree to which the 11 swipe samples that were subjected to radiochemical analysis are representative of the wastes that were handled within Hot Cell 4 is of key importance. The contamination on the swipes must represent the types and characteristics of the materials that were handled in hot cell to technically support the scaling factor development presented in GEVNC-RH-02 and CCP-AK-GEV-501. The smear samples were collected from numerous

surfaces and items within Hot Cell 4 and eleven samples were sent to Eberline Services Analytical Corporation for radiochemical analysis and gamma spectrometry. An aliquot of each of the 11 samples was sent to Southwest Research Institute (SWRI) for mass spectrometry (MS) to determine the contributions of ^{233}U , ^{234}U , $^{235/236}\text{U}$, ^{239}Pu , ^{240}Pu and ^{242}Pu .

In the course of reviewing the sample collection and analyses, the EPA inspection team expressed concern related to the lack of records documenting these activities. It became clear that the requested information, at a minimum, was not available or perhaps did not exist. On the morning of the last day of the inspection, GEVNC-CCP provided a DVD that they stated contained all of the requested information that supported or documented the sample collection and analyses. Given the timing of the information, EPA was not able to adequately review it during the on-site inspection. This is related to the situations that are documented in two formal EPA concerns, as discussed in Section 8.1(7), above, i.e., EPA Inspection Issue Nos. GEVNC-CCP-RH-AK-08-001F and GEVNC-CCP-RH-AK-08-003CR. The EPA inspection team was unable to examine objective evidence that supported several aspects of the sample collection and analyses. Following the onsite inspection, the information from Eberline was reviewed and EPA determined that there was sufficient support to address the technical questions posed at GEVNC. As GEVNC-CCP reviewed the Eberline results in detail following the inspection, they determined an error with respect to sample numbering. Specifically, an error in sample marking produced an anomalous value for uranium isotopes which, when corrected, produced a small change in the numerical value of radionuclide scaling factors. This in turn necessitated revising CCP-AK-GEV-501 and calculation packages GEVNC-RH-02, GEVNC-RH-04, GEVNC-RH-05, GEVNC-RH-06 and GEVNC-RH-07. Upon revision of CCP-AK-GEV-501 and the calculation packages, there were no technical issues regarding the representativeness of the samples collected and their radiometric analyses.

- (3) The development of radionuclide scaling factors was evaluated and found to be technically adequate.

A radionuclide scaling factor provides a technically sound method of deriving a value for radionuclides that are difficult to measure on the basis of an easily measurable attribute like external dose rate, assuming the measured dose rate can be correlated to a known constituent, such as ^{137}Cs . Scaling factors were developed based on the radiochemical and MS results. The MS data were used for isotopes pairs that could not be resolved using alpha spectrometry, i.e., $^{233}\text{U}/^{234}\text{U}$, $^{235}\text{U}/^{236}\text{U}$ and $^{239}\text{Pu}/^{240}\text{Pu}$, specifically to determine the contribution of each isotope. A ratio of each of these values to ^{137}Cs was developed to derive the radionuclide-specific scaling factors that are listed in Table 4, below. As a check on the reasonableness of the scaling factors, the GEVNC scaling factors were compared to what had been derived for other sites that had processed MOX, since the AK indicated that GEVNC handled MOX beginning in the earlier 1960s through the late 1970s⁵. This comparison is shown in CCP-AK-GEV-501, Figure 4-1. Apart from small discrepancies with respect to ^{241}Am and ^{233}U ⁶, the agreement provides a check

⁵ Specifically, the DOE sites are the Idaho National Laboratory, Argonne National Laboratory-East and Los Alamos National Laboratory.

⁶ The difference in ^{241}Am results from Am-Be neutron sources having been manufactured in Hot Cell 4. The ^{233}U difference is attributed to the fact that GEVNC did not process thorium fuel while the other DOE sites did.

on the reasonableness of using these scaling factors for the feed materials from which the Hot Cell 4 radionuclides was derived.

Table 4. GEVNC Scaling Factors Derived from Sample Data

Radionuclide	Cs-137 Scaling Factor Ci Radionuclide/Ci ¹³⁷Cs
Sr-90	2.68E-01
U-233	7.26E-07
U-234	1.40E-04
U-235	5.41E-06
U-236	2.68E-06
U-238	2.69E-06
Pu-238	1.07E-02
Pu-239	6.89E-02
Pu-240	3.31E-02
Pu-241	4.03E-01
Pu-242	2.29E-05
Am-241	9.62E-01
Cs-137	1.00E+00

The EPA inspection team evaluated the following aspects:

- Activity values used are derived from modeling and statistical metrics that support their use, and the statistical metrics include mean and standard deviation values for each measured radionuclide
- Isotopic activity values are correlated to the long-lived radionuclides that are responsible for the measured external dose rate, i.e., ¹³⁷Cs and ⁶⁰Co
- The appropriateness of the choice of physical constants and radionuclide-specific attributes (specific activity, physical half-life, decay heat, neutron cross-sections, photon transition probabilities, etc.) and the technical correctness of the values assigned to each attribute
- Contributions of the short-lived radionuclides and other gamma-emitting radionuclides to the total measured dose rate are sufficiently small to ignore
- All radionuclide values are decay-corrected, as appropriate
- The calculated results used to develop the scaling factors and convert the measured external dose rates to radionuclide activity levels
- The determination of the contribution of all radionuclides to the radiological hazard⁷
- Shielding and other calculations supporting the scaling factors were performed using MicroShield[®] to derive the appropriate DTC relationships as a function of waste density for the 55-gallon-drum geometry

⁷ Although the determination of a waste container's radiological hazard is not an EPA requirement, this information may be useful in understanding other aspects of a container's radiological characterization.

There are no issues related to the technical adequacy or documentation of the radionuclide scaling factors for Waste Stream GEVNC.01. Any revision to CCP-AK-GEV-501 that requires CBFO approval is a T2 change.

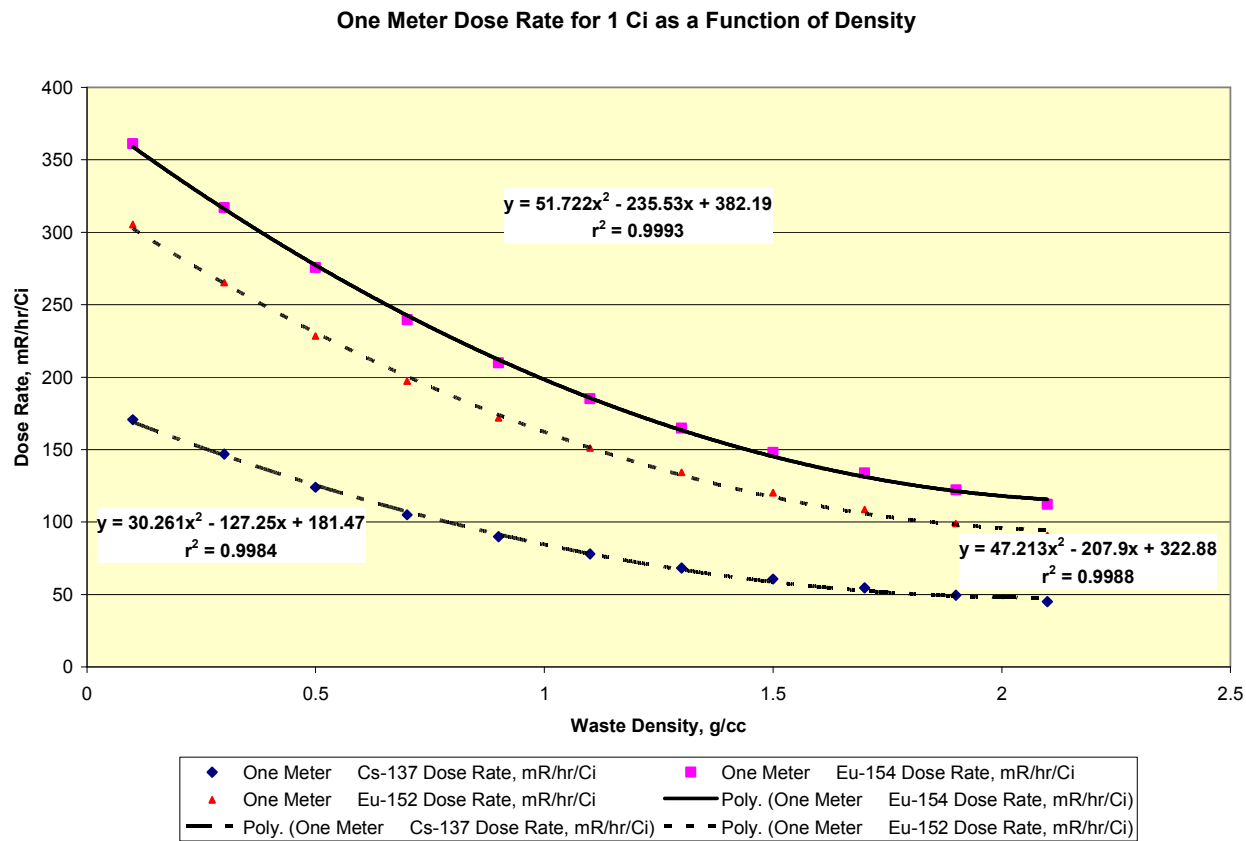
- (4) The technical basis of the Dose-to-Curie correlation was evaluated and found to be technically adequate.

The DTC correlation was based on the following assumptions:

- The waste drum is full of waste
- The radionuclides of interest are dispersed uniformly throughout the waste
- The waste matrix is iron, which is the most representative, i.e., photon attenuation is primarily a function of the matrix density, rather than specific waste composition or atomic number
- Waste densities range from 0.1 g/cc to 2.1 g/cc

Using MicroShield[®], GEVNC-CCP developed a DTC correlation for a 55-gallon drum filled with RH TRU waste in terms of mR/hr for a 1-curie source of ¹³⁷Cs, ¹⁵²Eu, and ¹⁵⁴Eu, shown in Figure 1.⁸ There are no issues related to the technical adequacy or documentation of DTC for Waste Stream GEVNC.01.

⁸ This plot was developed and used for ORNL-CCP. Given that the waste density and source strengths are identical the MicroShield[®] results would be the same.



- (5) Technical aspects and documentation of the radiological characterization process were evaluated and found to be acceptable upon modification of CCP-AK-ORNL-501.

The technical basis for the radiological characterization process is documented in ten calculation packages prepared and/or reviewed by Jene Vance, Jim Holderness, Dave Moody and Larry Porter. These packages document development of radionuclide scaling factors, uncertainty analyses, the DTC correlation discussed above, and other technical aspects. These packages provide the technical basis for several aspects, including the following:

- Application and verification of MicroShield®
- Evaluation of all potential contributors to a container's dose rate
- Evaluation of mass spectrometry data
- DTC calculations
- Data input checks
- Potential sources of uncertainty

The EPA inspection team reviewed these packages in advance of the on-site GEVNC inspection, and also had the opportunity to discuss all technical concerns and discrepancies with GEVNC-

CCP personnel. The calculation packages documented the technical activities upon which the radiological characterization was based, much of which was summarized in CCP-AK-GEV-501, Revision 0. Several aspects of CCP-AK-GEV-501, Revision 0 required clarification to accurately describe and support GEVNC-CCP's approach, as did calculation packages GEVNC-RH-01 and GEVNC-RH-03. These were noted and discussed with GEVNC-CCP personnel during the inspection. EPA captured these issues on an EPA Inspection Issue Tracking Form, as discussed below (see Attachment B.4 of this report for a copy of this form).

EPA Concern No. EPA-GEVNC-CCP-RH-RC-08-006CR, Final: The ten calculation packages that document the RC process as well as the CCP report CCP-AK-GEV-501 have multiple technical and editorial errors. As presented during the inspection, these documents require revision to accurately serve as objective evidence for the RC process.

Concern Response: A revised version of CCP-AK-GEVNC-501 (Revision 1) was provided to EPA in electronic form as were the revised calculation packages GEVNC-RH-01 and GEVNC-RH-03. The other five calculation packages discussed in (2) above were also provided in electronic form to address changes to the scaling factors. These revisions adequately addressed EPA's issues.

Concern Status: This issue is closed.

There were no technical issues related to the determination and documentation of the radiological characterization process for GEVNC Waste Stream GEVNC.01.

- (6) The technical basis and derivation of Total Measurement Uncertainty (TMU) were evaluated and were found to be adequate.

The development of TMU for Waste Stream GEVNC.01 is based on the propagation of uncertainties present in all aspects of the determination of the radiological constituents of RH TRU waste. The TMU determination included the contributions of:

- Drum weight measurement
- Measurement uncertainty
- Scaling factor uncertainty
- MicroShield[®] issues: internal code issues and modeling
- Contributions of other gamma emitters
- Drum-to-drum variation within each campaign
- Uncertainty in reported campaign inventories

The treatment of TMU is presented primarily in GEVNC-RH-13, ORNL-RH-07, and supported by MCNP sensitivity analyses documented in INL-RH-04. The results are summarized in CCP-AK-GEV-501. Statistical independence is essential if the individual contributors to uncertainty are to be added in quadrature, as was done in this case. The overall uncertainties listed by radionuclide are listed in Table 5. The conceptual approach for the TMU determination and its documentation was equivalent to what had been evaluated and approved by EPA during previous RH inspections. There were no concerns regarding the determination of TMU and its documentation for waste stream GEVNC.01.

Table 5. Overall Uncertainty for GEVNC Waste at a Density of 0.3 g/cm³

	Dose Rate Measurement Uncertainty	MicroShield[®] Code Uncertainty	Modeling Uncertainty	Scaling Factor Uncertainty	Total Uncertainty
U-233	25.0%	10.0%	13.9%	118.7%	122.5%
U-234	25.0%	10.0%	13.9%	50.4%	58.8%
U-235	25.0%	10.0%	13.9%	59.9%	67.2%
U-238	25.0%	10.0%	13.9%	78.7%	84.4%
Pu-238	25.0%	10.0%	13.9%	47.0%	55.9%
Pu-239	25.0%	10.0%	13.9%	50/6%	59.0%
Pu-240	25.0%	10.0%	13.9%	51.7%	59.9%
Pu-241	25.0%	10.0%	13.9%	46.3%	55.3%
Pu-242	25.0%	10.0%	13.9%	76.7%	82.4%
Am-241	25.0%	10.0%	13.9%	99.4%	103.9%
Sr-90	25.0%	10.0%	13.9%	44.5%	53.8%
Cs-137	25.0%	10.0%	13.9%	-	30.3%

(7) Radionuclide Documentation in DTC BDRs was assessed and found to be adequate.

Three completed DTC BDRs for GEVNC RH TRU Waste Stream GEVNC.01 were evaluated: BDR Nos. GEVRHDTTC08001, GEVRHDTTC08002 and GEVRHDTTC08003. Because there were only three BDRs available, EPA's evaluation amounted to a one hundred percent sample for this inspection, as opposed to selecting a subset or sample from a larger population. The EPA inspection team verified that all three DTC BDRs contained the following information for each RH TRU container:

- Container number
- Waste stream designation
- Waste net weight and material type
- Measured dose rates from four quadrants and the calculated average dose rate in mR/hr
- Scaling factor in curies per mR/hr
- Activity and mass values and uncertainties for the 10 WIPP-tracked radionuclides in curies and grams, respectively
- Activity and mass values and uncertainties for other TRU radionuclides in curies and grams, respectively, when applicable
- TRU alpha activity and concentration
- Plutonium equivalent curies (PE Ci) in curies
- Fissile gram equivalents (FGE) in grams
- Decay heat in watts
- Volume activity in curies per liter

- The DTC spreadsheets observed during the inspection had to be reissued following the inspection as a result of the changes made to the radionuclide scaling factors. The scaling factors used in these BDRs were incorrect, as discussed in (5), above. However the magnitude of the difference in each scaling factor is small and the impact on the radionuclide values will be minimal. Nonetheless, the BDRs observed during this inspection require revision prior to submittal as official records supporting the containers' certification.

(8) RH and TRU determinations were evaluated and found to be adequate.

The determination that the RH containers meet the definition of TRU wastes (TRU alpha activity with half-lives greater than 20 years at a concentration greater than 100 nCi/g) and RH waste (contact dose equivalent rate in excess of 200 mrem/hr) were examined, as discussed below.

TRU Determination: The three DTC BDRs that were prepared and evaluated by EPA during this inspection contained values for the 10 WIPP-tracked and other TRU radionuclides at concentrations greater than 100 nCi/g in all cases.

RH Determination: The three DTC BDRs that were prepared and evaluated by EPA during this inspection contained dose rate values for all containers in excess of 200 mRem/hr in all cases. The EPA inspection team was not able to observe collection of measurements for actual waste containers during this inspection. GEVNC personnel provided a demonstration of the DTC process in Building 217 and confirmed the following aspects:

- All radiation dose rate measurements are made as described in CCP-TP-504 and CCP Operator Aid RH-GEVNC.001, Revision 1, dated November 6, 2008
- The DTC operator (James Roswell) was listed on the GEVNC-CCP LOQI and he was current with respect to all appropriate training
- All drum movements were controlled using a small crane (2,000 lb maximum lifting capacity) and drums were weighed using a scale that had a current calibration
- A standard instrument jig was used to hold the gamma probe at a one-meter distance from the waste drum
- Drum rotations for DTC measurements were controlled by the operator located in a separate room a sufficient distance from the waste drum being assayed, assisted by a camera to maintain visual contact with the waste drum throughout the process
- Three survey meters were observed in Building 217, and all were the correct meter body and probe models and all had current calibrations⁹.

⁹ One of the meters lacked the appropriate calibration tag when EPA observed it in Building 217 but GEVNC-CCP personnel provided objective evidence that the meter had a current calibration and the tag inadvertently fell off the meter. EPA personnel verified that the appropriate tag was applied during the inspection.

Based on information from GEVNC-CCP personnel, it is expected that some of the containers from this waste stream will not qualify as RH and will eventually be characterized as CH, based on the observed DTC results, and these containers would then be subject to NDA. Because there is no approved CH WC program at GEVNC it is not clear where such assays would be performed, although it appears that a site like INL-CCP is a likely candidate. Regardless of where such analyses occur, if any wastes from GEVNC Waste Stream GEVNC.01 are characterized as CH using NDA, EPA must receive the results from all such assays as a T2 change.

There were no technical or documentation-related concerns regarding the TRU and RH determinations for GEVNC Waste Stream GEVNC.01.

Summary of Radiological Characterization Findings and Concerns

The EPA inspection team did not identify any findings related to radiological characterization and identified one concern requiring a response during the inspection related to radiological characterization that is discussed above. A copy of the EPA Inspection Issue Tracking Form recording it is provided in Attachment B.3. EPA considers this concern to have been adequately addressed upon submission of revisions of the calculation packages and CCP-AK-GEV-501. There are no open findings or concerns related to radiological characterization resulting from this inspection.

Proposed Baseline Approval

EPA is proposing to approve the DTC process as described in CCP-TP-504 in conjunction with the radionuclide scaling factors documented in CCP-AK-GEV-501, Revision 1, that were evaluated during this baseline inspection. This approval is limited to newly generated debris wastes that will originate from decontamination of Hot Cell 4 in Building 102 at GEVNC.

Proposed Radiological Characterization Tiers

T1 radiological characterization changes are not proposed since no new waste other than what has been proposed for approval will be characterized requiring development of DTC values and scaling factors.

T2 radiological characterization changes listed below with a reference to the specific radiological characterization section where each is discussed in parentheses must be provided to EPA:

- Revisions of CCP-AK-GEV-501 or CCP-TP-504 that require CBFO approval (3)
- Generation of measurement data for any GEVNC RH TRU container(s) that subsequently qualifies as CH and is subject to NDA (8)

GEVNC-CCP will provide EPA with information concerning T2 changes no later than 4 weeks after the last shipment of RH waste from the site is completed. Consistent with EPA's authority

under 194.24(h), EPA may request information relative to these changes if EPA deems the information is necessary to ensure compliance with EPA regulations.

8.3 Visual Examination

WC Element Description

The VE process for RH debris (S5400) waste, packaged from alpha Hot Cell 4 was inspected to determine the following aspects of TRU WC:

- Identification of WMPs
- Confirmation of the WMC
- Confirmation of presence or absence of prohibited items
- Determination of Primary Contents

VE is performed by two trained and qualified operators, as described in procedure CCP-TP-500.

Documents, BDRs, and Objective Evidence Reviewed

The following documents were among those the EPA reviewed to assess whether VE operations follow the appropriate approved procedures and meet VE requirements:

- CCP-TP-500, Revision 8, CCP Remote-Handled Waste Visual Examination, July 24, 2008
- CCP-QP-002, Revision 27, Training and Qualification Plan, September 30, 2008
- CCP-AK-GEV-500, Revision 1, Acceptable Knowledge Summary Report for General Electric Vallecitos Nuclear Center, Waste Stream GEVNC.01 – Hot Cell Debris Waste, October 28, 2008
- CCP-AK-GEV-502, Revision 0, CCP Remote-Handled Transuranic Waste Certification Plan for 40 CFR Part 194 Compliance and Confirmation Test Plan for General Electric Vallecitos Nuclear Center, Waste Stream GEVNC.01, October 30, 2008
- CCP-QP-005, Revision 16, TRU Nonconforming Item Reporting and Control, May 07, 2008
- CCP-QP-008, Revision 14, Records Management, September 19, 2007
- Draft WSPF, GEVNC.01
- DOE/WIPP 02-3214, Remote-Handled TRU Waste Characterization Program Implementation Plan, Revision 0D, October 30, 2003

Following is a complete list of all objective evidence that the EPA inspection team evaluated during the inspection:

- Visual Examination BDRs RHGEVE080001, RHGEVE080002, RHGEVE080003, RHGEVE080006

- List of currently qualified VE personnel
- Letter appointing VEE, dated August 21, 2006, and clarification email dated December 04, 2008
- Letter appointing VEE, dated January 4, 2006
- Qualification card and training records for two VEEs
- Qualification cards and training records for one VEO
- Required Reading Report for CCP-AK-GEV-500

Technical Evaluation

During the inspection, the EPA team evaluated the technical elements of the VE process using the checklist included as Attachment A-1 to this report. These areas are summarized as follows:

- (1) Overall procedural technical adequacy and implementation were assessed and were found to be adequate.

The VE procedure, documented in CCP-TP-500, Revision 8, contained specific information on performing VE, including identification of prohibited items, assignment of WMPs, and technical review of VE results. Waste items were identified by two VEOs and entered into an electronic Visual Examination Data Form (Attachment 1, CCP-TP-500) after concurrence by the operators. Identification and isolation of prohibited items was not an issue for this waste stream as the VE performed was packaging of waste contained in a hot cell. The EPA inspectors identified one adequacy issue for the procedure. This concern was discussed with GEVNC-CCP AK personnel, and EPA included it on an EPA Inspection Issue Tracking Form (see Attachment B.5 of this report for a copy of this form), as discussed below.

EPA Inspection Issue Tracking Form, Issue No. GEVNC-CCP-RH-VE-08-004CR, Final:

The packaging process implemented for VE is not incorporated in a formal CCP procedure and is only described in the AK summary, CCP-AK-GEV-500, Revision 1, Section 5.5.

Incorporating the packaging process instructions in a formal CCP procedure is necessary to ensure consistency of operation.

Concern Response: A formal response to this concern was submitted to EPA on January 30, 2009. In the response, CBFO stated that “the waste packaging process performed by GE and its contractors is not part of the CCP system to be certified” and that the waste “packaging process does not need to be formalized as the host site reserves the option to vary the final [waste] packaging configuration with CCP’s concurrence”. EPA accepted this response.

Status of Concern: This concern is closed.

Note that a related concern was identified with respect to the characterization of WMPs and prohibited items, as discussed under (3), below. The EPA concern listed above incorporates both issues.

The EPA inspectors identified one implementation issue for the procedure. This concern was discussed with GEVNC-CCP AK personnel, and EPA included it on an EPA Inspection Issue Tracking Form (see Attachment B.6 of this report for a copy of this form), as discussed below.

EPA Inspection Issue Tracking Form, Issue No. GEVNC-CCP-RH-VE-08-005C, Final: VE Procedure CCP-TP-500, Revision 8, Section 4.2.5 [C] states: “Ensure the waste package is stored with reasonable protection from tampering.” This activity is assigned to the VEO. In practice, the VEO does not perform this activity and is not, therefore, in compliance with CCP’s written procedure whenever VE is performed.

Concern Response: This concern did not require a response.

Status of Concern: This concern is closed.

- (2) Characterization of WMPs and prohibited items was evaluated and was found to be adequate.

During the inspection EPA observed VE and packaging of S5400 debris waste into a 55-gallon drum, container number GE019. This demonstration took place in Hot Cell 4 in Building 102. An audio/visual recording of the VE event was not required because two VEOs performed the examination, one of these VEOs also acted as VEE. An electronic version of the VE procedure, CCP-TP-500, was used by the VEOs to guide the VE process. The VEOs electronically verified the WMC from the AK summary as debris waste S5400.

Using manipulator arms within the hot cell, the GE operators picked up individual waste items for identification by the CCP VEOs. Only after both operators agreed on the identity of the waste and its WMP, was the item electronically entered into a Visual Examination Data Form, Attachment 1, CCP-TP-500. One operator called out the waste item identity and its WMP, which was orally confirmed by the second operator. After a VEO recorded the identity and WMP for the item, the GEVNC operators placed the waste into a duffle bag, which served to keep small waste items together. The duffle bag was recorded on the data form as “poly bag”. The duffle bag and its contents were loaded into the 55-gallon drum at the end of the demonstration. The duffle bag was transferred through an access port to the interlock for Hot Cell 4, the bag being heat-sealed in the plastic sleeve during this transfer. After the sealed plastic was vented, a cradle and hoist were used to place the duffle bag into the 55-gallon drum. The process used for transferring waste from the hot cell into the 55-gallon drum was not included in the VE procedure CCP-TP-500. This concern was discussed with GEVNC-CCP AK personnel, and EPA included it on the EPA Inspection Issue Tracking Form listed under (1), above.

At the time of the on-site inspection, no prohibited items had been found in the waste processed. None of the eighteen containers that had been through VE had been removed from the Hot Cell 4 interlock.

CCP had provided four BDRs for review by EPA: BDR Nos. RHGEVE080001, RHGEVE080002, RHGEVE080003, and RHGEVE080006. No NCRs had been generated for any of these four BDRs. The EPA inspectors found that the four data packages were correctly completed, three being reviewed at both data generation ITR and project level (SPM) and one at

the ITR level only. The primary contents for all containers in the four BDRs were listed as “steel”.

Any change made to the VE procedure(s) that requires CBFO approval is a T2 change.

Documentation of VE activities was examined and was found to be adequate.

EPA inspectors reviewed data packages listed above to verify that the VE data were documented correctly and completely. Site personnel used an electronic VE data form for data entry during the on-site demonstration, i.e., Attachment 1 of CCP-TP-500. All valid data packages reviewed included completed review checklists (Attachments 2 and 3, CCP-TP-500).

(3) Training for VE personnel was examined and was found to be adequate.

CCP maintains a list of qualified individuals, which it uses to ensure that all training is current and only qualified individuals perform characterization activities. As part of the inspection, the EPA team reviewed the qualification packages for VEOs and VEEs and found that they demonstrated comprehensive and adequate training for VE personnel.

The EPA inspectors reviewed the following records:

- List of currently qualified VE personnel
- Letter appointing VEE dated August 21, 2006, and clarification e-mail dated December 04, 2008
- Letter appointing VEE dated January 4, 2006
- Qualification card and training records for two VEEs
- Qualification cards and training records for one VEO
- Required Reading Report for CCP-AK-GEV-500

The EPA found the training and qualification records for VE personnel to be complete and available for review.

Summary of VE Findings and Concerns

The EPA inspection team identified the two concerns related to VE that are discussed above. Copies of the EPA Inspection Issue Tracking Forms are provided as Attachment B.5 – B.6 of this report. EPA considers these concerns to have been adequately addressed and there are no open findings or concerns related to VE resulting from this inspection.

Proposed Baseline Approval

EPA is proposing to approve the VE system for debris waste that the EPA inspection team evaluated during this baseline inspection, consisting of the following elements:

- Trained personnel—VE operators, VEE, and SPM
- Approved and controlled operating procedures—CCP-TP-500, Revision 7; CCP-QP-002, Revision 27
- VE records and supporting data—electronic VE data form, CCP-TP-500 review checklists, and VE BDRs

VE as performed by two trained operators is suitable for RH S5400 debris waste, waste stream GEVNC.01.

Proposed VE Tiers

No T1 VE changes have been proposed as no additional RH waste will be characterized at GEVNC-CCP.

Only the following T2 VE change is being proposed.

- Any changes made to a VE procedure(s) that requires CBFO approval (2)

GEVNC-CCP will provide EPA with information concerning this T2 change no later than 4 weeks after the last shipment of RH waste from the site is completed. Consistent with EPA's authority under 194.24(h), EPA may request information relative to this change if EPA deems the information is necessary to ensure compliance with EPA regulations.

8.4 WIPP Waste Information System

WC Element Description

CCP has successfully submitted both RH and CH WC data for TRU waste containers to the WWIS in the past. The CCP procedures, practices, and the personnel who process container data that the EPA inspectors observed at GEVNC-CCP are the same as those used at other CCP sites whose WC programs EPA has approved. Procedure CCP-TP-530 is used for submittal of both characterization and certification RH data to the WWIS. Waste Certification Assistants (WCAs) and Waste Certification Officials (WCOs) are based in the CCP office in Carlsbad, New Mexico, and data transfer is performed electronically.

Documents, Records and Objective Evidence Reviewed

The following documents were among those the EPA inspectors reviewed to assess whether WWIS operations follow the appropriate approved procedures and meet WWIS requirements:

- CCP-TP-530, Revision 7, RH TRU Waste Certification and WWIS Data Entry, July 11, 2008
- CCP-QP-002, Revision 27, Training and Qualification Plan, February 7, 2008

The EPA inspectors evaluated the following objective evidence during the inspection:

- Testing results (DTC, VE, radiological survey, and AK tracking sheet) for container GE003
- WWIS Data Entry Summary – Characterization and Certification for GEVNC Containers GE003 and GE004
- Waste Container Data Report for Containers GE003 and GE004
- Draft WSPF, GEVNC.01
- WWIS WCA and WCO qualification card

Technical Evaluation

- (1) Overall procedural technical adequacy was evaluated and was found to be adequate.

The WWIS procedure, documented in CCP-TP-530, RH TRU Waste Certification and WWIS Data Entry, Revision 7, is well defined and controlled and contains instructions for entering, reviewing, and transmitting data. The WWIS data entry procedure incorporates adequate reviews to minimize the transmittal of noncompliant or incorrect data. The Microsoft Excel spreadsheet used for data entry was adequate and was controlled.

- (2) Implementation and documentation of WWIS activities were examined and were found to be adequate.

GEVNC-CCP did not have an approved WSPF for RH waste at the time of the onsite inspection and consequently had not generated any official records for EPA review. A qualified GEVNC WCO demonstrated the certification process by uploading RH data into the test instance of WWIS. However, the usual records (emails, signed data spreadsheet, etc.) were not available for review. The process used for GEVNC container certification is the same as that used on other CCP sites, including the procedure, process and personnel. Personnel entering data into the WWIS can only do so after being granted access by the WWIS administrator, and access is password-protected. After the data have been through every level of review and approval, the WCA entered the data into a controlled Excel spreadsheet that had been validated in accordance with CCP-QP-22, Revision 10, Software Quality Assurance Plan. The control number for this spreadsheet is SCO 1023. All radionuclides identified by DTC are entered into the spreadsheet for RH waste. A review of the spreadsheet is made by a second WCA to verify correct data entry. The WCO reviews the data to ensure that they are WIPP-compliant and signs the spreadsheet to accept the data. At this point, site personnel convert the data into ASCII format files and transmit them to the WWIS. The information contained in the container file is subsequently used for transportation activities. The WCO is also responsible for building canisters, which contain three certified containers. The list that informs the WCO of which

containers are to be placed in the same canister is called the “build list” (see Concern above) and is sent to the WCO by the Transportation Certification Official (TCO).

The EPA inspectors viewed demonstrations of data entry and retrieval. GEVNC-CCP was able to demonstrate the container certification process using the characterization test instance of WWIS for container Nos. GE003 and GE004. The WWIS processes were challenged by entering non-compliant data to ensure that the internal WWIS checks were able to identify problem data. The WCO was able to retrieve and print requested records, including waste container data reports for containers GE003 and GE004.

Any changes to WWIS procedure(s) that requires CBFO approval is a T2 change. Any change to the Excel spreadsheet, WWIS data entry summary—characterization and certification, is a T2 change.

(3) Training of WWIS personnel was reviewed and was found to be adequate.

The EPA inspectors observed the actual job performance of a WCA/WCO to verify training and qualification. Inspectors also reviewed the qualification card for a WCA (data entry personnel) and WCO. Required training included use of the WWIS user’s guide, and the required reading list included the RH WCPIP. Training documentation was complete and filed correctly for viewing and reference. WCOs and WCAs are qualified for the type of waste (CH or RH) and for individual generator sites.

Summary of WWIS Findings and Concerns

There were no findings or concerns related to WWIS identified during this inspection.

Proposed Baseline Approval

EPA is proposing to approve the container certification system that was evaluated during this baseline inspection, consisting of the following:

- Trained WWIS WCA and WCO
- Approved and controlled operating procedures - CCP-TP-530, Revision 7; CCP-QP-002, Revision 26
- Approved and controlled Excel spreadsheet, WWIS data entry summary—characterization and certification

Proposed WWIS Tiers

No **T1 WWIS change** is being proposed.

The following are two **T2 WWIS changes** with a reference to the specific WWIS section where each is discussed in parentheses:

- Changes to WWIS procedure(s) that require CBFO approval (2)
- Changes to the Excel spreadsheet titled WWIS Data Entry Summary Characterization and Certification (2)

GEVNC-CCP will provide EPA with information concerning T2 changes no later than 4 weeks after the last shipment of RH waste from the site is completed. Consistent with EPA's authority under 194.24(h), EPA may request information relative to these changes if EPA deems the information is necessary to ensure compliance with EPA regulations.

9.0 RESPONSE TO COMMENTS

This section is reserved for public comments.

10.0 SUMMARY OF RESULTS

10.1 EPA Findings and Concerns

The one finding and four concerns requiring responses that were identified during this inspection related to the WC processes GEVNC-CCP implemented to characterize RH TRU debris waste. The specific issues requiring a response and GEVNC-CCP's responses are discussed in the preceding sections of this report. Copies of the EPA Inspection Issue Tracking Forms that capture the finding and the four concerns are included in Attachments B.1 through B.5 of this report. The one concern that did not require a response is included in Attachment B.6. GEVNC-CCP revised a number of documents to address the finding and the concerns that required responses and submitted them for EPA review following the initial onsite inspection. The EPA inspection team completed their review of the revised documents and determined that they adequately addressed all aspects of the EPA finding and the four concerns that required responses. All issues relative to the finding and all concerns were adequately addressed and EPA considers these issues to be closed. No GEVNC-CCP EPA issues related to this inspection remain open at this time.

10.2 Conclusions

The scope of this proposed approval is based on EPA's baseline inspection conducted between December 2 and 4, 2008. EPA has determined that the GEVNC-CCP RH WC program is technically adequate. EPA, therefore, is proposing to approve the GEVNC-CCP RH WC program for RH Waste Stream GEVNC.01 that was evaluated during this baseline inspection, as described and documented in this report. The proposed approval includes the following:

- (1) The AK process for the RH TRU debris waste stream, designated as Waste Stream GEVNC.01 that will be generated from decontamination activities of the Hot Cell 4 in Building 102.
- (2) The radiological characterization process using DTC and radionuclide scaling factors for assigning radionuclide values to Waste Stream GEVNC.01, as documented in CCP-AK-GEV-501, Revisions 0 and 1, and detailed in this report.

- (3) The VE process to identify WMPs and the physical form of the waste.
- (4) The WWIS to submit data for both characterization and certification for RH TRU waste.

This proposed approval is limited to RH TRU debris wastes from GEVNC Waste Stream GEVNC.01, as supported by the WC processes and documentation the EPA inspection team evaluated during this inspection. Wastes other than these are excluded from this approval, hence no T1 changes are proposed. Since the EPA December 2008 inspection, however, as the RH debris waste was being characterized GEVNC-CCP has changed certain WC procedures which are identified in this report as T2 changes above and included in Tables 1 and 6. GEVNC-CCP will provide EPA with information concerning T2 changes no later than 4 weeks after the last shipment of RH waste from the site is completed. Consistent with EPA's authority under 194.24(h), EPA may request information relative to these changes if EPA deems the information is necessary to ensure compliance with EPA regulations.

Upon EPA review of the T2 changes submitted to EPA, EPA will notify the public regarding the results of its evaluations of any proposed T2 changes through posting them on to the EPA Web site and by sending e-mails to the WIPPNEWS list (see Section 2.0 of this report for a brief discussion of tiering).

Note that as part of D&D activities along with RH debris, a small amount of CH-TRU debris waste will be generated. It is expected that GEVNC-CCP will ship the CH containers to another CCP site for characterization and disposal. Notification concerning this shipment and appropriate documentation (e.g., revisions to host site AK records) relative to these GEVNC CH containers must be provided to EPA.

Table 6. Tiering of RH TRU WC Processes Implemented by GEVNC-CCP, Based on December 2–4, 2008 Baseline Inspection

RH WC Process Elements	GEVNC-CCP RH WC - T1 Changes	GEVNC-CCP RH WC - T2 Changes*
Acceptable Knowledge (AK)	None**	Notification and submission of the following items: <ul style="list-style-type: none"> - Correlation and Surrogate Summary Form; (AK 2) - Revisions to the AK Summary CCP-AK-GEV-500, including changes to the associated Reference List; (AK 6) - Updates and revisions to CCP-AK-GEV-501; (AK 12) - Revision of reference M007; (AK 12) - Additional discrepancy resolutions; (AK 13) - Final Waste Stream Profile Form and related attachments, and subsequent change requests; (AK 14) - AK Accuracy reports for this waste stream; (AK 15)
Radiological Characterization, Dose-to-Curie (DTC), and the application of radionuclide-specific scaling factors	None**	Notification and submission of the following items: <ul style="list-style-type: none"> - Revisions of CCP-AK-GEV-501 or CCP-TP-504 that require CBFO approval; (RC 3) - Generation of measurement data for any GEVNC RH TRU container(s) that subsequently qualifies as CH and is subject to NDA; (RC 8)
Visual Examination (VE)	None**	Notification and submission of the following items: <ul style="list-style-type: none"> - Any change to VE procedure(s) that requires CBFO approval; (VE 2)***;
WIPP Waste Information System (WWIS)	None at this time	Notification and submission of the following items: <ul style="list-style-type: none"> - Changes to WWIS procedure(s) that require CBFO approval; (WWIS 2)***; - Changes to the Excel spreadsheet titled WWIS Data Entry Summary Characterization and Certification; (WWIS 2)

* All applicable T2 changes must be provided to EPA within four (4) weeks of completion of the last shipment of GEVNC RH debris proposed for approval to WIPP for disposal

** No additional RH waste from GEVNC will be characterized using the site processes evaluated during the inspection

*** Excluding changes that are editorial in nature or are required to address administrative concerns

11.0 REFERENCES

U.S. Department of Energy, Carlsbad Area Field Office, “Contact-Handled Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant (CH-WAC),” Revision 3, DOE/WIPP-02-3122, Carlsbad, New Mexico, April 25, 2005.

U.S. Environmental Protection Agency, “Criteria for the Certification and Recertification of the Waste Isolation Pilot Plant’s Compliance with the Disposal Regulations: Certification Decision; Final Rule,” *Federal Register*, Vol. 63, No. 95, May 18, 1998, pp. 27354, 27405.

U.S. Code of Federal Regulations, *Title 40, Protection of Environment*, Part 191, “Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes.”

U.S. Code of Federal Regulations, *Title 40, Protection of Environment*, Part 194, “Criteria for the Certification and Re-Certification of the Waste Isolation Pilot Plant’s Compliance with the 40 CFR Part 191 Disposal Regulations.”

U.S. Department of Energy, Carlsbad Area Field Office, “Remote Handled TRU Waste Characterization Program Implementation Plan,” DOE/WIPP-02-3214, Revision 0D, Carlsbad, New Mexico, October 30, 2003.

U.S. Department of Energy, Title 40 CFR Part 191, Compliance Certification Application for the Waste Isolation Pilot Plant, DOE/CAO 1996-2184, Carlsbad, New Mexico, 1996.

U.S. Department of Energy, Title 40 CFR Part 191, SUBPART D AND C, Compliance Recertification Application 2004, DOE/WIPP/2004-3231.

U.S. Department of Energy, Carlsbad Area Field Office, “Quality Assurance Program Document (QAPD),” DOE/CBFO-94-1012, Revision 7, Carlsbad, New Mexico, July 2005.

U.S. Nuclear Regulatory Commission, “Contact-Handled Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC).

ATTACHMENT A.1: VISUAL EXAMINATION (VE) CHECKLIST

EPA Inspection No.: EPA-GEVNC-CCP-RH 12.08-8

Inspection Date: December 2–4, 2008

Establishment of Required Technical Elements in Procedures	Y/N Location	Execution of Procedures	Y/N	Objective Evidence/Comment
RHVE-1: Site procedures identify required training and qualifications for RHVE personnel.	WCPIP, Rev. 0D, Sect. 4.1.2 CCP-QP-002, Rev. 27	<ul style="list-style-type: none"> Formal training elements include: project requirements, container identification and labeling, applicable state and federal regulations Site-specific training program: OJT, identification of summary category groups, WMPs, packaging configurations, residual liquids 	Y	<p>EPA reviewed training records for both VE operators and VE Experts (VEEs). CCP records contained specific job training and required reading records. Site-specific training is provided through the required reading system and is appropriate. VEEs are designated by SPMs and are considered qualified to perform their duties when training is completed and the individual is added to the LOQI. At the time of the inspection, there were two personnel qualified as Operator/ITR/SME/OJT and one qualified as Operator/ITR for VE at GEVNC.</p> <p><u>Objective evidence:</u></p> <ol style="list-style-type: none"> LOQI for VE Training records for two VE SME and one VE operator
RHVE-2: Operator qualification and re-qualification requirements are described.	WCPIP, Rev. 0D, Sect. 4.1.2 CCP-QP-002, Rev. 27, Sect. 4.2.5	<ul style="list-style-type: none"> To become qualified, the RHVE operator must pass a comprehensive written test based on training objectives with a minimum score of 80% Demonstrate capability in the presence of the site VEE during OJT RHVE operators re-qualified every 2 years based on continued satisfactory performance Unsatisfactory performance – failed to identify prohibited item during OJT of score of less than 80% on exam 	Y	<p>The personnel performing VE at the facility are experienced and have been qualified on other CCP projects. EPA reviewed training records for personnel on the LOQI and determined that only qualified personnel were performing VE. Training included required reading, examination, and OJT.</p> <p><u>Objective evidence:</u></p> <ol style="list-style-type: none"> LOQI for VE Training records for two VE SME and one VE operator (VEO)
RHVE-3: Each site has a designated VE expert (VEE).	WCPIP, Rev. 0D, Sect. 4.2.2	<ul style="list-style-type: none"> VEE designation is documented VEE has knowledge of the RH TRU waste being characterized 	Y	<p>VEE designations are communicated by e-mail and the e-mails are retained as records. This e-mail states that the VEE meets the prerequisite for the position and requests initiation of training. Only after this training has been</p>

ATTACHMENT A.1: VISUAL EXAMINATION (VE) CHECKLIST

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Inspection Date: December 2–4, 2008

Establishment of Required Technical Elements in Procedures	Y/N Location	Execution of Procedures	Y/N	Objective Evidence/Comment
	CCP-PO-001, QAPjP, Rev. 16	<ul style="list-style-type: none"> Responsible for overall direction and implementation of VE at the facility Certification Plan specifies the selection, qualification, and training requirements of VEE 		<p>completed is the VEE considered fully qualified.</p> <p>Site-and waste stream-specific training are provided by CCP. Personnel received training on the AK summary CCP-AK-GEV-500 prior to performing VE operations.</p> <p><u>Objective evidence:</u></p> <ol style="list-style-type: none"> LOQI for VE Training records for two VE SME and one VEO
RHVE-4		<ul style="list-style-type: none"> Operators review AK Tracking Spreadsheet to verify that correct containers examined Rejected containers are placed in a shielded container with a CCP Hold Tag attached Provide container processing information to SPM/VPM 	NA	The process inspected was VE performed during packaging of waste contained in a glovebox.
RHVE-5: Procedures and technical guidance documents provide complete instructions for performing RHVE.	WCPIP, Rev. 0D, Sect. 4.1.2.1, CCP-TP-500, Rev. 8, Sect. 4.1–4.2, Attachment 1	Procedures are sufficiently detailed to enable the operator to determine if a waste container meets the criteria of 40 194.24 with regard to identifying applicable parameters with waste limits [40 194.24, c, (4) – demonstrate that a system of controls has been and will continue to be implemented to confirm that the total amount of each waste component that will be emplaced in the disposal system will not exceed the upper limiting value or fall below the lower limiting value described in the introductory text of paragraph (c) of this section].	Y	<p>The EPA observed the packaging operations for 55-gallon drum GE019 in Cell 4 of Building 102. The two glovebox operators who manipulated and packaged the waste were GE employees. Two CCP VE personnel performed the actual VE, identifying and documenting the waste loaded into container GE019. CCP did not make an audio/visual recording of the VE event (GE did make a recording, but not for VE purposes). VEOs reviewed the AK summary sheet to verify the waste matrix code for the container (S5400).</p> <p>The CCP VEE and VEO had an electronic copy of CCP-TP-500 to guide their activities and electronically entered the WMPs into Attachment 1 after identification and concurrence between the CCP VE personnel. The identity of the waste, e.g., “rubber glove,” was called out by the VEE and verbally</p>

ATTACHMENT A.1: VISUAL EXAMINATION (VE) CHECKLIST

EPA Inspection No.: EPA-GEVNC-CCP-RH 12.08-8

Inspection Date: December 2–4, 2008

Establishment of Required Technical Elements in Procedures	Y/N Location	Execution of Procedures	Y/N	Objective Evidence/Comment
		<ul style="list-style-type: none"> All existing VE tapes will be reviewed and the VE data will be documented (NA for ORNL-CCP) Existing waste container packaging records will be qualified by VE or RTR 100% of containers will be subject to VE at the time of packaging Waste Stream Description and WMC verified Presence/absence of prohibited items 		<p>repeated by the VEO before it was entered into Attachment 1. Small pieces of waste were loaded into a plastic duffel bag to keep the waste together. The operators used a flashlight to illuminate items if they are difficult to identify. Both the duffel bag and waste were loaded into the 55-gallon drum. The duffel bag was recorded as “poly bag” on the container inventory. The process used for waste transfer out of the hot cell and into the drum was not included in the VE procedure CCP-TP-500. EPA generated a concern.</p> <p>CCP was able to confirm the waste stream description and waste matrix code.</p> <p>Prohibited items are not loaded into containers and are left in the glovebox for remediation.</p> <p>The waste was transferred through the access port to the interlock for cell 4 and heat-sealed before being placed in the container. Transfer of the waste into the container was achieved using a cradle and hoist. The heat-sealed bag was vented prior to loading. The loaded and closed container is then placed in a shielded container, which allows the container to be moved for storage. At the time of the inspection, no containers had been removed after completion of VE.</p> <p>The primary content was recorded as “Steel” for all containers in the BDRs reviewed.</p> <p><u>Objective evidence:</u> 1. BDRs RHGEVE080001, RHGEVE080002 and RHGEVE080003, RHGEVE080006</p>
RHVE-6	CCP-TP-500, Rev. 8,	<ul style="list-style-type: none"> Corrective actions are taken when necessary 	Y	No corrective actions have been generated up to and including the time of the inspection. CCP personnel are experienced at identifying and generating corrective action

ATTACHMENT A.1: VISUAL EXAMINATION (VE) CHECKLIST

EPA Inspection No.: EPA-GEVNC-CCP-RH 12.08-8

Inspection Date: December 2–4, 2008

Establishment of Required Technical Elements in Procedures	Y/N Location	Execution of Procedures	Y/N	Objective Evidence/Comment
	Sect. 2.4.2			reports due to work at other CCP sites.
RHVE-7: Site procedure(s) require data generation and project level reviews of Batch Data Reports (BDRs).	WCPIP, Rev. 0D, Sect. 3.5.1 CCP-TP-500, Rev. 8	<ul style="list-style-type: none"> • ITR review Attachment 2 • SPM review Attachment 3 	Y	<p>EPA reviewed three BDRs during the on-site inspection. These BDRs were RHGEVE080001, RHGEVE080002, RHGEVE080003 and. Each BDR consisted of VE data for two containers. All BDRs had been reviewed by an Independent Technical Review and BDRs RHGEVE080001, RHGEVE080003 and RHGEVE080006 had been reviewed by the SPM</p> <p><u>Objective evidence:</u> 1. BDRs RHGEVE080001, RHGEVE080002 and RHGEVE080003, RHGEVE080006</p>
RHVE- 8	CCP-TP-500, Rev. 8, Sect. 5.0	<ul style="list-style-type: none"> • Lifetime/QA records – Attachments 1–5, Copy of NCRs • QA/nonpermanent records – VHS tape or DVD (primary and backup) 	Y	<p>Audio/visual recording was not made because two operators performed the VE.</p> <p>No NCRs had been generated at the time of the inspection.</p> <p>BDRs contained attachments as required.</p>
RHVE-9: Quality Assurance Objectives are defined and met.	WCPIP, Rev. 0D, Table 2.1 40 CFR Part 194.22.b	<p>Data Accuracy: <u>194.22, b, (1):</u> the degree to which data agree with an acceptable reference or true value</p> <p><u>WCPIP:</u> maintained by requiring operators to pass a comprehensive test with a score of 80% and demonstrated satisfactory performance for initial qualification and re-qualification</p> <p>Data Precision: <u>194.22, b, (2):</u> a measure of the mutual agreement between comparable data gathered or developed under similar conditions</p>	Y	<p>Data Accuracy: CCP VE personnel training records include examination, required reading and OJT.</p> <p>Data Precision: Two operators agreed on waste identification and WMP before it was entered on Attachment 1, Visual Examination Data Form.</p>

ATTACHMENT A.1: VISUAL EXAMINATION (VE) CHECKLIST

EPA Inspection No.: EPA-GEVNC-CCP-RH 12.08-8

Inspection Date: December 2–4, 2008

Establishment of Required Technical Elements in Procedures	Y/N Location	Execution of Procedures	Y/N	Objective Evidence/Comment
		<p>expressed in terms of a standard deviation</p> <p><u>WCPIP</u>: maintained by reconciling any discrepancies between two operators (or operator and ITR) with regard to physical form of waste, absence of residual liquid</p> <p>Data Representativeness</p> <p><u>194.22, b, (3)</u>: the degree to which data accurately and precisely represent a characteristic of a population, a parameter, variations at a sampling point, or environmental conditions</p> <p><u>WCPIP</u>: Contents placed in a container will be described on the data forms</p> <p>Data Completeness</p> <p><u>194.22, b, (4)</u>: a measure of the amount of valid data obtained compared to the amount that was expected</p> <p><u>WCPIP</u>: relevant waste information must be collected and documented on a videotape and/or data form or other unalterable media</p> <p>Data Comparability</p> <p><u>194.22, b, (5)</u>: a measure of the confidence with which one data set can be compared to another</p> <p><u>WCPIP</u>: ensured by site meeting training requirements and complying with the minimum standards used to implement VE</p>		<p>Data Representativeness: Two operators agreed on waste identification and WMP before it was entered on Attachment 1, Visual Examination Data Form. The waste item was called out by one operator and orally confirmed by the second operator who entered the data into the electronic data form.</p> <p>Data Completeness: All waste items were identified and recorded prior to loading. Small items were collected in a duffle bag, which was ultimately loaded into the 55-gallon drum.</p> <p>Data Comparability: CCP has a well established training program for VE personnel. Initial qualification for the operators included required reading, OJT and examination. Re-qualification takes place every 2 years.</p>

ATTACHMENT A.1: VISUAL EXAMINATION (VE) CHECKLIST

EPA Inspection No.: EPA-GEVNC-CCP-RH 12.08-8

Inspection Date: December 2–4, 2008

Establishment of Required Technical Elements in Procedures	Y/N Location	Execution of Procedures	Y/N	Objective Evidence/Comment
RHVE-10: VE as a method to qualify AK data	WCPIP, Rev. 0D, Sect. 4.3, 4.3.3 CCP-TP-500, Rev. 8 CCP-QP-002, Rev. 26	<p>194.24, c, (4) – demonstrate that a system of controls has been and will continue to be implemented to confirm that the total amount of each waste component that will be emplaced in the disposal system will not exceed the upper limiting value or fall below the lower limiting value described in the introductory text of paragraph (c) of this section</p> <p>If VE is used as a qualification method for AK, all of the requirements in Sections 4.3 and 4.3.3 are met:</p> <ul style="list-style-type: none"> • Quality and reliability of the measurement control program under which the data were generated (QC samples included in the VE process) • Extent to which the data demonstrate the properties of interest (VE process generates data for <u>all</u> items in containers) • Qualification of personnel generating data (training records for personnel on tapes performing the original VE event if qualifying existing data) • Technical adequacy of the procedures used to generate the original data (copies of original procedures) 	Y	<p>QC for this type of VE process is limited to concurrence between two operators. Because this was origin packaging activities, other QC e.g., duplicates to assess precision, are not applicable. Data are subject to two levels of review by the ITR and SPM.</p> <p>During the demonstration, all waste items were identified, recorded and packaged.</p> <p>CCP has a well-established training program for VE personnel. Initial qualification for the operators included required reading, OJT and examination. Re-qualification takes place every 2 years.</p> <p>EPA inspectors reviewed the VE procedure, CCP-TP-500, R. 8 and generated the following concern requiring a response because final packaging instructions were not included in the procedure: <u>GEVNC-CCP-RH-VE-08-004CR</u>: The packaging process implemented for VE is not incorporated in a formal CCP procedure and is only described in the AK summary, CCP-AK-GEV-500, Revision 1, Section 5.5. Incorporating the packaging process instructions in a formal CCP procedure is necessary to ensure consistency of operation.</p> <p>Procedure CCP-TP-500 requires the VEO to protect the waste from tampering. Because this is not performed by the VEO or other personnel, EPA generated the following concern not requiring a response: <u>GEVNC-CCP-RH-VE-08-005C</u>: VE Procedure CCP-TP-500, Revision 8, Section 4.2.5 [C] states: “Ensure the waste package is stored with reasonable protection from tampering.” This activity is assigned to the VEO. In practice, the VEO does not perform this activity and is not, therefore,</p>

ATTACHMENT A.1: VISUAL EXAMINATION (VE) CHECKLIST

EPA Inspection No.: EPA-GEVNC-CCP-RH 12.08-8

Inspection Date: December 2–4, 2008

Establishment of Required Technical Elements in Procedures	Y/N Location	Execution of Procedures	Y/N	Objective Evidence/Comment
				in compliance with CCP's written procedure whenever VE is performed.

ATTACHMENT A.2: WIPP WASTE INFORMATION SYSTEM (WWIS) CHECKLIST

EPA Inspection No.: EPA-GEVNC-CCP-RH 12.08-8

Inspection Date: December 2–4, 2008

Establishment of Required Technical Elements in Procedures	Location	Execution of Procedures	Y/N	Objective Evidence/Comment
WWIS-1: WWIS and Data Entry Personnel must be trained to assess data and properly enter data into the WWIS.	CCP-QP-002, Rev. 27 CCP-TP-530, Rev. 7, Sect. 2.2.1	<ul style="list-style-type: none"> WCO and Data Entry Personnel are trained to assess data and properly enter and transfer all data in the WWIS. Training for Data Entry Personnel and data reviewers/verifiers includes the WIPP Waste Information System User's Manual and the applicable site procedures. Training records are available for review and are complete. 	Y	<p>EPA reviewed the training records for the two WCA/WCOs qualified for this site.</p> <p>Initial training includes WIPP Waste Information System User's Manual and OJT. Addendum G records WCA training for all RH TRU sites. Addendum H records WCO training for all RH TRU sites. The WCO qualifying examination is performed verbally with an SME.</p> <p>Training records were complete for the WCA/WCO who performed the onsite demonstration of WWIS.</p> <p><u>Objective evidence:</u> 3. Training records for two WWIS WCA/WCOs</p>
WWIS-2: Security measures for ensuring data integrity and accessing WWIS are sufficient.	CCP-TP-530, Rev. 7, Sect. 4.1	Access to WWIS is controlled. WWIS access requests are recorded in an access log that is available for review.	Y	Access to WWIS is password controlled. Each WCA and/or WCO must obtain a password from the WWIS Administrator prior to beginning work, and passwords become invalid if an employee leaves CCP.
WWIS-3: There are adequate procedures for entering data into the WWIS and transmitting data to WIPP.	CCP-TP-530, Rev. 7, Sect. 3.0, 4.0	Employee's explanation of job duties was consistent with applicable procedures. WWIS and Data Entry Personnel adequately explained how data are assessed, input, and transferred into WWIS.	Y	<p>A WCO demonstrated, in the test instance, how data are entered, checked, and uploaded into WWIS for GEVNC data. At the time of the onsite inspection, GEVNC did not have an approved Waste Stream Profile Form (WSPF) and containers could not be certified for shipment. A minimum of results from 10 containers are needed to approve a WSFP. These data are entered into the Characterization module of WWIS and transferred to the Certification module of WWIS after WSPF approval. During the demonstration, data were entered into the test instance of WWIS.</p> <p><u>Objective evidence:</u> 1. WWIS Data Entry Summary – Chaz & Cert for GEVNC containers GE003 and GE004</p>
WWIS-4: Procedures require that only verified and validated data are	CCP-TP-530, Rev. 7,	Data generation and project-level reviews of container data for WWIS entry have been	Y	The WCO explained the process used for certifying containers from GEVNC prior to entering some data

ATTACHMENT A.2: WIPP WASTE INFORMATION SYSTEM (WWIS) CHECKLIST

EPA Inspection No.: EPA-GEVNC-CCP-RH 12.08-8

Inspection Date: December 2–4, 2008

Establishment of Required Technical Elements in Procedures	Location	Execution of Procedures	Y/N	Objective Evidence/Comment
entered into WWIS.	Sect. 4.3, Table 1	performed and review checklists are complete.		<p>into WWIS. Containers only become eligible for WWIS entry after completion of the review checklists (ITR and SPM) are completed. A WCA obtains a list of eligible containers from a SPM and obtains hard copies of the applicable BDRs to facilitate WWIS data entry. The following information is required for WWIS entry: dose-to-curie results (radionuclide activities), VE data, radiological survey results, and the AK tracking sheet for the waste stream.</p> <p><u>Objective evidence:</u></p> <ol style="list-style-type: none"> 1. Testing results (dose-to-curie, VE, radiological survey, and AK tracking sheet) for container GE003 2. WWIS Data Entry Summary – Chaz & Cert for GEVNC containers GE003 and GE004
WWIS-5: Procedures include instructions for entering characterization data into the Characterization Data System (CDS) WCO Review Form and data discrepancy resolution.	CCP-TP-530, Rev. 7, Sect. 4.4, Table 1	<ul style="list-style-type: none"> • WCA uses Table 1 to identify and enter required data into the CDS. • Second WCA reviews data, initials, and dates. • If data discrepancies cannot be resolved the form is sent to WCO or SPM for resolution. 	Y	<p>CDS was not used for this site at the time of the onsite inspection and all data were obtained from hard copies.</p> <p>A spreadsheet, GEVNC RH template.xls, is used to enter data, and this completed spreadsheet is reviewed by a second WCA. Results of this 100% review of data are recorded on the spreadsheet. If data is corrected in the spreadsheet, the change is made and initialed. If the actual data appear to be incorrect, it is returned a SPM for verification.</p> <p>The spreadsheet has been validated in accordance with procedure CCP-QP-22, R.10, Software Quality Assurance Plan. The control number for this spreadsheet is SCO 1023.</p> <p>If data discrepancies cannot be resolved by the two WCAs, then a SPM or WCO is contacted for resolution.</p> <p><u>Objective evidence:</u></p>

ATTACHMENT A.2: WIPP WASTE INFORMATION SYSTEM (WWIS) CHECKLIST

EPA Inspection No.: EPA-GEVNC-CCP-RH 12.08-8

Inspection Date: December 2–4, 2008

Establishment of Required Technical Elements in Procedures	Location	Execution of Procedures	Y/N	Objective Evidence/Comment
				1. WWIS Data Entry Summary – Chaz & Cert for GEVNC containers GE003 and GE004
WWIS-6: Containers are not submitted to WWIS if there are open NCR/CARs.	CCP-TP-530, Rev. 7, Sect. 4.3.11	WCA requests QAO to confirm that there are no open NCR/CARs for the containers entered into the CDS.	NA	CDS was not used for this site at the time of the onsite inspection. No NCRs had been issued for the containers processed to date. CCP has a well-defined process for ensuring that there are no open NCRs associated with candidate containers, which has been demonstrated at other sites for both CH and RH waste. The container number is entered into the PTS database, which identifies any open NCR for that container.
WWIS-7: Procedures provide instructions for WCO review of characterization and certification to WWIS.	CCP-TP-530, Rev. 7, Sect. 4.4 WCPIP, Rev. 0D, Sect. 4.2.9	The WCO verifies: <ul style="list-style-type: none"> • TRU alpha activity is >100 nCi/g for each payload container. • Confirm WWIS Data Spreadsheet or CDS WCO Review Form information is accurate and complete. • TRUCON Code (waste is not incompatible). • WSPF number. • Site-specific identifier precedes container number. 	Y	<p>During the inspection, the WCO explained to EPA entries on the spreadsheet, including TRU alpha activity, TRUCON code, and WSPF (not yet approved). To challenge the edit limit checks built into the spreadsheet, the WCO changed TRU alpha activity, so that it was below the required value. WWIS rejected these data.</p> <p>The TRUCON code is reviewed by the WCO to ensure that when canisters are “built,” they will be compatible (3 containers per each canister).</p> <p>The WSPF number for this waste stream is GEVNC.01, which was not approved at the time of the inspection.</p> <p>The site-specific identifier for this site is “cc.”</p> <p><u>Objective evidence:</u></p> <ol style="list-style-type: none"> 1. WWIS Data Entry Summary – Chaz & Cert for GEVNC containers GE003 and GE004 2. Waste Container Data Report for container GE003 and GE004

ATTACHMENT A.2: WIPP WASTE INFORMATION SYSTEM (WWIS) CHECKLIST

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Inspection Date: December 2–4, 2008

Establishment of Required Technical Elements in Procedures	Location	Execution of Procedures	Y/N	Objective Evidence/Comment
WWIS-8: WMP weights for each SCG are entered into WWIS in accordance with the procedure.	CCP-TP-530, Rev. 7, Sect. 4.5.9–4.5.10 WCPIP, Rev. 0D, Sect. 4.2.9	S5000: <ul style="list-style-type: none"> If calculated CPR weight is = or < net weight of container, enter the net weight of the container as “plastic.” If calculated CPR weight is = or > net weight of container, enter maximum weight of CPR as “plastic.” 	Y	EPA reviewed the spreadsheets for containers GE003 and GE004 and the Waste Container Data Report for container GE003 to verify that all waste was entered as “PW” (plastic waste). The amount of PW entered was calculated for the gross and net weights for the container. This is a debris waste stream, S5400. <u>Objective evidence:</u> 1. WWIS Data Entry Summary – Chaz & Cert for GEVNC containers GE003 and GE004 2. Waste Container Data Report for containers GE003 and GE004
WWIS-9: Reviewed data are entered into WWIS.	CCP-TP-530, Rev. 7, Sect. 4.5	<ul style="list-style-type: none"> WCO signs and dates CDS or WWIS Data spreadsheet. WCO or WCA submits data to WWIS (certification module if WSPF approved, characterization module if WSPF not approved). WWIS Administrator accepts/rejects data via e-mail 	NA	No data had been submitted to the characterization module WWIS at the time of the inspection. Data from 10 containers are needed for WSPF approval. The demonstration used the WWIS test instance for data entry.
WWIS-10: Resolution of data deficiencies.	CCP-TP-530, Rev. 7, Sect. 4.4.17-4.4.18, 4.4.22-4.4.24, 4.5.11	<ul style="list-style-type: none"> Hold NCR 	NA	No NCRs had been issued against the containers processed at the time of the inspection. CCP has a well-defined process for ensuring that there are no open NCRs associated with candidate containers, which has been demonstrated at other sites for both CH and RH waste. The container number is entered into the PTS database, which identifies any open NCR for that container.
WWIS-11	CCP-TP-530, Rev. 7,	<ul style="list-style-type: none"> After submission, the Waste Container 	Y	EPA reviewed the data sheets for container GE003 and the required information was available. The filter

ATTACHMENT A.2: WIPP WASTE INFORMATION SYSTEM (WWIS) CHECKLIST

EPA Inspection No.: EPA-GEVNC-CCP-RH 12.08-8

Inspection Date: December 2–4, 2008

Establishment of Required Technical Elements in Procedures	Location	Execution of Procedures	Y/N	Objective Evidence/Comment
	Sect. 4.6.13	<p>Data Report is printed, signed, and dated,</p> <ul style="list-style-type: none"> Copies of data, radiological survey, filter information, signed Waste Container Data Report, and correspondence sent to CCP records custodian. 		<p>information was recorded in the comments section of the VE data sheet. Because GEVNC containers had not yet been entered into WWIS, the records available were limited to characterization data.</p> <p><u>Objective evidence:</u></p> <ol style="list-style-type: none"> WWIS Data Entry Summary – Chaz & Cert for GEVNC containers GE003 and GE004 Waste Container Data Report for containers GE003 and GE004
WWIS-12: Records retention.	CCP-TP-530, Rev. 6, Sect. 5.0	<p>QA/Lifetime records:</p> <ul style="list-style-type: none"> WWIS Data SS or CDS WCO Review Forms. Waste Container Data Report. WWIS Data Approval/Rejection Reports. Correspondence. <p>QA/Nonpermanent:</p> <ul style="list-style-type: none"> CDS Database (electronic). 	Y	<p>CDS database was not used for this waste stream at the time of the inspection.</p> <p>Characterization data, spreadsheets, and Waste Container Data Reports were available for the demonstration containers GE003 and GE004.</p> <p><u>Objective evidence:</u></p> <ol style="list-style-type: none"> WWIS Data Entry Summary – Chaz & Cert for GEVNC containers GE003 and GE004 Waste Container Data Report for containers GE003 and GE004

**ATTACHMENT B.1. EPA INSPECTION ISSUE TRACKING FORM,
EPA INSPECTION ISSUE NO. GEVNC-CCP-RH-AK-08-002CR, FINAL**

Inspection No. EPA-GEVNC-CCP-RH.12-08.8	Issue Number: GEVNC-CCP-RH-AK-08-002CR Date: December 5, 2008, Final
Inspector: Connie Walker Attachments? YES	Sample Size: NA Population size (if known): NA
Description of Issue: CCP-AK-GEV-500 and other AK-related documents require technical and editorial modifications to correct errors and/or to clarify information. These modifications include, but are not limited to, the items that are listed in Attachment 1.	
B. Regulatory Reference: 40 CFR 194.24(c)	
C. Site requirement(s): Not applicable	
D. Discussed with: Mark Doherty, Kevin Peters, Irene Qunitana	
E. Additional Comments: None	
F. Site Response Information: Site Response Required? YES Site Response Due Date: January 14, 2009	

EPA Concern No. GEVNC-CCP-RH-AK-08-002CR
Attachment 1, Page 1 of 2

Issues Related to CCP-AK-GEV-500, Partial List

- References for each of the bulleted time-line activities presented on pages 8-9 of the AK Summary, and correlation of these activities (through reference to detailed discussions) on pages 12-16 are not provided.
- The AK Summary does not clearly state that Hot Cell 4 will be decontaminated and the interior enclosure will be removed, but the cell will not be demolished and will instead be used in the future for other purposes.
- Section 4.1 is unclear regarding which discussions address GEVNC as a whole versus activities that took place in Hot Cell 4.
- The AK record does not reflect all changes that were made to the waste stream volume and radionuclide scaling factors, including the text and tables.
- Information in the text of the AK Summary pertaining to the Q-tip smears obtained in 1982, including the specific analysis and information provided by the activity, is insufficient. This is important because the Sampling and Analysis Plan (SAP) apparently uses this information as the basis for developing specific aspects.
- The radionuclide discussion in Section 5 does not adequately address generalized waste composition. Of particular importance are changes in activities/potential radiological contamination pre-post 1978 (i.e., MOX prior with exceptions, sources post, with exceptions). CCP did not prepare a radiological analysis or table to accompany their own time line that may help make these changes. Note that Section 5.4.10 may also require revision based on EPA Concern No. GEVNC-CCP-RH-AK-08-003CR.
- Table 5 of the CCP-AK-GEV-500 does not adequately reflect modified radionuclide scaling factors.
- The prohibited item discussion in Section 5.4.12 does not include an updated and thorough spent nuclear fuel (SNF) analysis.
- Table 6 is unclear regarding the quantification methods for TRU Waste, RH Waste, Activity, and determination of the 10 WIPP-Tracked radionuclides.
- Table 6 does not include all AK source documents. It is not clear why reference C007 (e.g., for TRU Waste DQO determinations) is included.

EPA Concern No. GEVNC-CCP-RH-AK-08-002CR
Attachment 1, Page 2 of 2

Issues Related to AK Accuracy Report, Partial List:

- The AK Accuracy Report (December 1, 2008) states that the AK compilation for the waste stream is complete and the required AK accuracy report is therefore incorporated into CCP-AK-GEV-502. This is not correct, as the waste stream contains only six characterized containers.
- Ensure that reference lists, including Attachments 1 (WCPIP) and 4 (CCP-TP-005), include all references presented in CCP-AK-GEV-501.

Issues Related to Confirmation Test Plan, Partial List:

The Confirmation Test Plan CCP-AK-GEV-502 states on page 12 that performance of additional swipe sample collection efforts will be evaluated if the variability of sample results so warrants; please clarify whether this will actually be performed.

**ATTACHMENT B.2. EPA INSPECTION ISSUE TRACKING FORM,
EPA INSPECTION ISSUE NO. GEVNC-CCP-RH-AK-08-001F, FINAL**

Inspection No. EPA-GEVNC-CCP-RH.12-08.8	Issue Number: GEVNC-CCP-RH-AK-08-001F Date: December 5, 2008, Final
Inspector: Connie Walker Attachments? NO	Sample Size: NA Population size (if known): NA
<p>Description of Issue: The Energy Solutions Sampling and Analysis Plan (SAP) GE Vallecitos Nuclear Center Hot Cell #4 provides the proposed Energy Solutions sampling locations and sample numbers for swipes to be collected from Hot Cell 4. However, the final sample numbers and locations presented in CCP-AK-GEV-500 and 501 are inconsistent with the proposed sample numbers and locations presented in the SAP. There was no report or memorandum that documented the results of the SAP as it was implemented, including final sample locations, corresponding sample numbers, and location of field duplicates and associated sample identifiers. Also indicate whether any trip blanks or other field-related quality control samples were collected, and whether these were transmitted to the laboratory for analysis. Revise, as necessary, all discussions in CCP-AK-GEV-500 and 501 to be internally consistent and to reflect the results provided. Provide the revised CCP-AK-GEV-500 and 501, as well as the report or documents from Energy Solutions.</p>	
<p>B. Regulatory Reference: 40 CFR 194.24(c)</p>	
<p>C. Site requirement(s): WCCIP, Attachment C, Section 6</p>	
<p>D. Discussed with: Mark Doherty, Jene Vance, Dick Blauvelt</p>	
<p>E. Additional Comments: None</p>	
<p>F. Site Response Information:</p> <p>Site Response Required? YES Site Response Due Date: January 14, 2009</p>	

**ATTACHMENT B.3. EPA INSPECTION ISSUE TRACKING FORM,
EPA INSPECTION ISSUE NO. GEVNC-CCP-RH-AK-08-003CR, FINAL**

Inspection No. EPA-GEVNC-CCP-RH.12-08.8	Issue Number: GEVNC-CCP-RH-AK-08-003CR Date: December 5, 2008, Final
Inspector: Connie Walker Attachments? NO	Sample Size: 1 Population size (if known): NA
Description of Issue: The Sampling and Analysis Plan (SAP) must meet the requirements as specified in Attachment C, Section 6 of the RH WCPIP. Please address the following: <ul style="list-style-type: none"> • The WCPIP states that the sampling plan "...shall be developed using the guidance provided in EPA QA/G5 and QA/G9." Please indicate how this was attained. • According to the WCPIP, the waste may include materials in which the "RH TRU materials embedded in...other solid material may require samples to be obtained from within the material." Based on the available data, please address whether any material are present in the GEVNC waste stream that may require this consideration. • The WCPIP requires that the SAP be submitted to CBFO for review and approval. Please provide evidence of the review and approval. 	
B. Regulatory Reference: 40 CFR 194.24(c)	
2C. Site requirement(s): RH WCPIP	
D. Discussed With: Mark Doherty	
E. Additional Comments: None	
F. Site Response Information: Site Response Required? YES Site Response Due Date: January 14, 2009	

**ATTACHMENT B.4. EPA INSPECTION ISSUE TRACKING FORM,
EPA INSPECTION ISSUE NO. GEVNC-CCP-RH-RC-08-006CR, FINAL**

Inspection No. EPA-GEVNC-CCP-RH.12-08.8	Issue Number: GEVNC-CCP-RH-RC-08-006CR Date: December 5, 2008, Final
Inspector: Patrick Kelly Attachments? NO	Sample Size: 8 Population size (if known): 11
Description of Issue: The ten calculation packages that document the radiological characterization (RC) process and the CCP report CCP-AK-GEV-501 have multiple technical and editorial errors. As presented during this inspection, these documents require revision to accurately serve as objective evidence for the RC process.	
B. Regulatory Reference: 40 CFR 194.24(c)	
2C. Site requirement(s): Not applicable	
D. Discussed with: Joe Harvill, Jene Vance, Earl Bradford, Mark Doherty	
E. Additional Comments: None	
F. Site Response Information: Site Response Required? YES Site Response Due Date: January 14, 2009	

**ATTACHMENT B.5. EPA INSPECTION ISSUE TRACKING FORM,
INSPECTION ISSUE NO. GEVNC-CCP-RH-VE-08-004CR, FINAL**

Inspection No. EPA-GEVNC-CCP-RH.12-08.8	Issue Number: GEVNC-CCP-RH-VE-08-004CR Date: December 5, 2008, Final
Inspector: Dorothy E Gill Attachments? NO	Sample Size: 1 Population size (if known): NA
Description of Issue: The packaging process implemented for VE is not incorporated in a formal CCP procedure and is only described in the AK summary, CCP-AK-GEV-500, Revision 1, Section 5.5. Incorporating the packaging process instructions in a formal CCP procedure is necessary to ensure consistency of operation.	
B. Regulatory Reference: 40 CFR 194.24(c)	
2C. Site requirement(s): Not applicable	
D. Discussed with: Tommy Mojica, Joe Garcia	
E. Additional Comments: None	
F. Site Response Information: Site Response Required? YES Site Response Due Date: January 14, 2009	

**ATTACHMENT B.6. EPA INSPECTION ISSUE TRACKING FORM,
INSPECTION ISSUE NO. GEVNC-CCP-RH-VE-08-005C, FINAL**

Inspection No. EPA-GEVNC-CCP-RH.12-08.8	Issue Number: GEVNC-CCP-RH-VE-08-005C Date: December 5, 2008, Final
Inspector: Dorothy E Gill Attachments? NO	Sample Size: 1 Population size (if known): NA
Description of Issue: VE Procedure CCP-TP-500, Revision 8, Section 4.2.5 [C] states: "Ensure the waste package is stored with reasonable protection from tampering." This activity is assigned to the Visual Examination Operator (VEO). In practice, the VEO does not perform this activity and is not, therefore, in compliance with CCP's written procedure whenever VE is performed.	
B. Regulatory Reference: 40 CFR 194.24(c)	
2C. Site requirement(s): Not applicable	
D. Discussed with: Tommy Mojica, Joe Garcia	
E. Additional Comments: None	
F. Site Response Information: Site Response Required? NO Site Response Due Date: Not applicable	